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ORIGINAL COMMUNICATIONS.

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A REVIEW OF RECENT PROGRESS IN OTOTOLOGY.*

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Closure of Eustachian Tube after Radical Operation—In 1912 Laurowitsch of Jena made a study of the relation of the Eustachian tube to the external canal and the end results in seventy-eight cases of radical operation. The question of the patency of the tube was determined by two methods: First, catheterizing the ear, plugging the external canal around a rubber pack, and carrying the end of the rubber tube into a dish of water. If air went through the Eustachian tube bubbles would appear in the water. Second, by the use of the bougie.

The cases were divided into five groups. First, those in which there were lasting, satisfactory dry external canals without the formation of crusts and with good epithelization (in these cases the tubes were as a rule closed). There were 26 per cent of these. Group two consisted of relatively satisfactory healing but with spots of non-inflammatory mucus membrane on the promontory and with a few scaly scabs but no inflammatory process and only a small amount of secretion. In the external canal there would be a slight degree of moisture. The tubes were with a few exceptions open, but the mucous membrane was free of inflammation. Fourteen per cent of these cases were present. These were considered relatively ideal. The third group consisted of cases with more or less continuous muco—or mucopurulent secretion going through the tubes or the middle ear cavity, and with visible inflammatory portions of mucus membrane on the promontory. The mouth of the tubes were thickened and boggy and had more or less granulations, and many crusts. The tubes were always open. There were thirty-three per cent of these cases. Here, too, the secretion was sometimes present and sometimes absent. In the fourth group there was a mucus secretion, granulations and secreting portions in the middle ear cavities

*Read before the twenty-first annual meeting of the American Laryngological, Rhinological and Otological Society in Chicago, June 15, 16, 17, 1915.

or in the region of the antra but not at the mouth of the tube. This was apparently covered with skin or at least appeared to be healing and with apparently no relationship between the condition and the tube canal. In reality, however, the canal was closed by a cicatrical drum and behind this drum there was a small recess containing secretion which would discharge itself at the point where granulations appeared to be present. This was demonstrated by the use of bougies. There were twenty-one per cent of these cases. The fifth group consisted of cases in which the secretion continued with the formation of granulations on various points of the operated field. Even when the tube was closed there was not complete healing. Every case had caries of the labyrinth wall, necrotic or infected small pneumatic cells. Constitutional affections played an important part. There were five and one-half per cent of these cases.

Careful study of the whole revealed a failure to bring about closure of the Eustachian tube and in order to bring this about two methods were tried, first a small quadrilateral skin flap transplanted over the mouth of the tube. In the larger number of cases in which this was tried there was satisfactory healing but the secretion sometimes macerated the epithelium and the result was unsatisfactory. The second method was to fill the mouth of the Eustachian tube with a cone of horn. The results of this to date were good. It did not seem to act in any way as an irritable foreign body. It may be covered over by a small bit of skin plastic and may be placed either at the time of the primary operation or any secondary operation. In the discussion following this paper Urbantschitsch suggested the use of nitrate of silver moistened bougies, while Siebenmann held that it was better to keep the Eustachian tube open. This view he still holds. He also is strongly opposed to curetting the mouth of the tube at the time of the operation.

Operative Treatment of Otitis Media—Much has been done along this line but little that is absolutely new. Reik of Baltimore, believing that chronic, exudative otitis media has for its principal cause and exciting factor some abnormality in the nose, pharynx or nasopharynx reported thirty-four cases operated upon for such.

Ruttin (Z. f. O., Volume 71, No. 1, Page 59), suggested that in cases of old, chronic middle ear catarrh with retraction of the malleus handle a hook be entered through the drum behind the malleus and the hammer pulled forward so that its attachment to the tympanic wall be severed causing both the drum and the hammer to lie in a normal position. This he claimed gave an improvement in hearing of from fifteen to twenty feet. The operation is indicated in retracted drums with immobile hammer where there is no im-

provement after the catheter and there is a hearing distance of three to six feet in conversation improved by the ear tubes, no inflammatory process and no otosclerosis.

Radical Mastoid—Four hundred and fifty cases of acute and chronic mastoids operated through the external canal have been reported by Thies. There were four cases of facial paralysis which were cured after several weeks. Several of these operations were performed under local anesthesia but this is not applicable where there is a mastoid abscess, brain or meningeal symptoms, sinus thrombosis, general pyemia or in very young individuals.

At a recent meeting of the American Otological Society Dr. Dench presented a new method of primary skin grafting, which seemed to those who heard the paper to be an improvement in the after care of the radical operations. As the paper (at the time of writing) has not yet been published, the reviewer can only refer to it and suggest that it be read by those interested when it appears in publication.*

Meningitis—While considerable work has been done during the past few years notably by Kopetzky, Haynes and others little has come from it except the clarification of ideas in regard to the disease. The fatalities are probably as great as ever and the surgical measures offered for the relief have not yet justified the expectations of their originators. There seems to be sufficient clinical proof that an occasional case of meningitis recovers, even when the diagnosis cannot be questioned. There also seems to be no proof that the disease is influenced by any therapeutic measure which has yet been advanced. The study is very important and interesting and it is hoped that something positive will eventually develop.

Radium—Considerable interest has been and still is taken in the use of radium. Hegel used it for one-half to one minute directly upon the ear, for one-half minute behind the ear. There was improvement in the majority of cases in the hearing power and in tinnitus. In twelve cases of sclerosis and internal ear deafness there was improvement in one-half the cases. All of these were treated by the usual method without results, and such influence as suggestion, hysteria, etc., ruled out. From six to twelve treatments were given, with from two to three days between each treatment. The treatments were used from one to four minutes and the cost was very high. A pencil of mesotherium costs less than radium and being carried in a radium capsule can be placed in the canal. In all sixteen cases have been reported.

*Dench, E. B.—An improved Technique in the Application of the Thiersch Graft in the Radical Operation for Chronic Middle Ear Suppuration. *The Laryngoscope*, November, 1915.

Albrecht, in Bruhl's Klinik, says that radium does not help the hearing but appears to lessen the tinnitus. It may be used to destroy the labyrinth where such a procedure is indicated.

Haenlein comes to the same conclusion and says that tinnitus was improved in eight of his cases and made worse in one.

Vaccines—Consensus of opinion as to this subject seem to vary. Those supporting it claim that the success in their use must result from obtaining a virulent type of bacteria securing their cultural characteristics at the proper time of the organism's life cycle, and subjecting the vaccine to the lowest degree of heat possible to complete the sterilization. The pus should always be obtained by suction and not by the probe. The proper media should be used, often the virulent organism responsible for the suppuration will not grow on ordinary media and the vaccine thus made proves useless. Thus failure is often due to the manner of preparation. This is not said to belittle the laboratory workers for it is an extremely easy matter to overheat it, to use the wrong media or to over or under incubate it. Then, too, the dosage and the time of dosage are all important. Many otologists have abandoned their use because of failure to obtain the desired results, when perhaps this failure was due to the preparation.

In September, 1914, Haskin made the statement that he had not performed a radical operation in the last eight years on a private patient. He reported a large number of cases of almost every known etiological factor which were treated with vaccines with very gratifying results. Of special note was the matter of cleansing the canal and external ear and the method of obtaining the secretion for culture and vaccine as well as the preparation, dosage and observation of the treatment. He also pins much faith to thorough cleansing of the canal by suction before applying drying powders.

Dr. Braislin, Brooklyn, N. Y., applied vaccines in six cases subsequent to mastoid operation, out of a total of thirty-five. It was not used in the smoothly convalescent cases but employed in the following complications, first—extensive infiltration of the glands of the neck following an operation for streptococcic mastoiditis and cervical abscess. Second—intermediate or obscure causes of elevated temperature (the lateral sinus excluded from involvement). Third—delay in granulation and healing process in mastoid wounds. Fourth—pain in limbs, joints and back without special elevation of temperature after an operation for streptococcic mastoiditis. Fifth—in a case of post-operative pneumonia. Sixth—in a case of infection of the lateral sinus. The doctor felt enthusiastic over the results and believed that more and more good could be accomplished by

this method of treatment, especially after post-operative measures had been resorted to to remove the suppurative focus. Christy claims they are indicated only when local methods have failed, and even then should be employed with other treatment. In chronic cases the efficiency is determined by the condition of the circulation of the mastoid and by the amount of necrosis. The best results are obtained in subacute cases but are of some advantage in cases of long standing. Huvelle in the N. Y. State Journal of Medicine, May, 1912, says that within a year the ear will be dry except in cases of long standing if the vaccines are given at regular intervals and are suitable to the cases. In cases of subacute purulent otitis media they hasten convalescence and abort complication and that they are of advantage used in post-operative mastoiditis, furunculosis and perichondritis.

Blood Cultures: Hays (Arch. of Diagnosis, Jan. 1912), points out the fact that even in the presence of an intermittent temperature a blood culture may at first prove negative owing to the bactericidal property of the blood. It is only later when the organisms enter the blood stream in profuse quantities that the blood can no longer overcome the bacteria.

Sodern claims that microorganisms are usually not present in the circulation and blood cultures are sterile in acute otitis with or without mastoid complications. However positive cultures have been obtained and that with or without unrecognized sinus thrombosis, thus making doubtful the statement that general infection of otitic origin does not occur except in cases of sinus thrombosis. The most frequent organism in the blood stream following otitic disease is the streptococcus, second the staphlococcus, third the streptococcus mucosus, fourth the pneumococcus. The relative severity, however, does not correspond with the relative frequency as the streptococcus mucosus is the most virulent.

Sheppard (Amer. L. R. and O. Society, 1914) says a distinction must be made between the cases needing operation and those not needing it, and suggests as aids careful observation of the temperature curve, whether the process is localizing or tending to become general, frequent blood counts, blood cultures sufficiently often to determine knowledge as to the persistence of the organism, and whether the number of colonies, per cc. is increasing or diminishing, thus showing whether or not the patient is in need of assistance in the way of bacterins.

Salvarsan: Recognition of ear diseases due to syphilis has led to more frequent use of salvarsan iodides and mercury. Nothing new in the way of syphilis treatment is reported, but the more thorough

study of the diagnostic features which led to this treatment has gained considerable ground. Deafness coming on suddenly, often over night, usually bilateral, and frequently associated with ozena, is suggestion of syphilis. It is claimed by Grey that if Meniere's symptom complex is present due to syphilis there is but one attack (while if due to other ethiological factors there will be apt to be many such attacks). The deafness is very profound, tinnitus is slight or absent, associated protean manifestations of cerebrocerebellor character, normal drums and open tubes, facial paralysis symptoms. Deafness may follow the use of Salvarsan treatment that improves under syphilitic treatment and other common leatic having been indicated by syphilitic symptoms elsewhere than in the ear. A swelling or infiltration may take place around the nerves following a dose of Salvarsan which is due to the liberation of the toxines of syphilis which brings on what is known as Herxheimer's reaction. This causes pressure on the long canals, and blindness, facial paralysis and deafness may follow. This is not an indication that Salvarsan is contradicted, but rather to be continued in conjunction with mercury and iodides and elimination promoted.

G. Baril, in 1912, reported a patient who had been tabetic for fifteen years with a positive Wassermann, suffered from head noises, vertigo and gradual loss of hearing. He was given four injections of salvarsan, thirty, forty, fifty centigrams respectively. The improvement was surprisingly rapid.

In 1912 Lang reviewed the literature as to the present status of Salvarsan therapy and ear. He thinks that the cases recorded point directly to the fact that vestibular lesions are directly due to Salvarsan. One must consider the occurrence of deafness complicating lues even when no Salvarsan has been administered. He states that aural symptoms often disappear after further doses of the drug, yet they also disappear frequently without it, and admits that Salvarsan has an unfavorable effect upon the ear in some cases, that it therefore should be examined before the injection. Nevertheless, in stubborn aural leutic infection Salvarsan is indicated.

Beck of Vienna made a report in 1912 on otitic indications and contraindications of the Salvarsan treatment of syphilis and in conclusion says that Salvarsan indicated in hereditary syphilis is open to question. On the one hand considerable improvement in the functional activity of the ear was noted, on the other hand an equally significant deterioration; but Wanner reported experiments on the functional tests of the ear in congenital lues before and after administration of Salvarsan which contradicted Beck's report.

SOME REMARKS ON THE X-RAY DIAGNOSIS OF MASTOIDITIS.*

DR. EMIL AMBERG, Detroit, Mich.

At the Ninth International Otological Congress at Boston, discussing Dr. Luc's paper, I mentioned the following case of otitis externa on the right side, in which the x-ray examination was of great help to me on account of the difficulty of the anamnesis.

No. 1. Miss M. H., 15 years old, seen June 18, 1912. Swelling over mastoid region on right side. No pain when auricle was drawn upward, forward and downward but great tenderness on pressure over the whole mastoid process. The Roentgenologist reported the mastoid intact. I liberated, under gas anesthesia, about a teaspoonful of pus. Otitis externa. The mastoid not opened. Prompt recovery.

The assistance rendered me by the radiologist impressed me very much. I followed up the x-ray examination of the mastoid somewhat more systematically during the last winter. This work was facilitated by virtue of the fact that we have a very able Roentgenologist in our city. All the pictures were made by Dr. Hickey or his staff. As a rule, both mastoids are examined.

No. 2. Miss F. H. Seen December 5, 1914. Started with itching in right ear, external ear sore, thought to have mumps. Little serous discharge, this a. m. Drum membrane appeared gray-red and bulging, tenderness over mastoid. Also otitis externa. Incised, pus. Yesterday felt dizzy and nauseated. December 6, 1914, x-ray examination. Cloudiness of right mastoid. December 7, 1914, from hospital record: the trouble began three years ago with pain in right ear and soreness of auricle. Operation: paracentesis. Diploetic mastoid, no free pus found. Discharged December 15, 1914, improved.

No. 3. Mrs. T. F., 39 years old. Admitted December 28, 1914. Suffered for several weeks from an otitis media suppurativa (right side) requiring repeated incisions. Tenderness over mastoid. X-ray: compact left mastoid. Portion of cells cloudy. Operation, December 30, 1914. Culture from mastoid. Short chained streptococcus. Free pus in tip. Discharged January 1, 1915, improved.

No. 4. Girl, H. W., 5 years old. Started January 20, 1915, with an otitis media and tonsillitis. Temperature 106°. Drum mem-

*Read before the American Otological Society in Niagara Falls, Ontario, June 4, 1915. Illustrated by lantern slides.

brane incised the same day. Very free discharge, mostly streptococcus. Redness over mastoid January 23, 1914. On January 24, 1914, very distinct mastoid tenderness. X-ray picture same evening showed mastoid involvement. Operation same night. Free pus in large terminal cell. Pneumatic large mastoid. Temperature going down only gradually. Discharged February 5, 1915, improved.



No. 1. (Left.)

Prolonged convalescence, two large sequesters taken out of wound about nine weeks after operation. Recovery.

No. 5. Boy, D. K., 5 years. Admitted February 1, 1915. Otitis media suppurativa left ear. Incisions January 27, 28, 29, 1915; last time in ether narcosis. Drum membrane sagging, thick. Severe headache. Some tenderness over antrum. X-ray picture: mastoid cells clear except in region of antrum. Operation, February 2, 1915, pus in antrum. Blood: poly., 74 per cent.; small, 11 per cent.; large,

15 per cent. Culture from left ear. Short chain streptococcus, non-encapsulated diplococcus which is diplococcus catarrhalis. Discharged February 11, 1915, improved.

Remarks. The radiologist (Dr. Hickey was absent), reported the mastoid clear. I called his attention to the region of the antrum where a marked difference existed in favor of the other ear. Together with the clinical symptoms, the condition appeared to require



No. 1. (Right.)

surgical interference. The findings during the operation proved the intervention to have been necessary.

No. 6. Mrs. G. B., 27 years old, seen and admitted February 7, 1915. Says right ear began to ache February 4, 1915. Membrana tympani incised when seen on the 7th. Some edema over mastoid region; could open mouth only a little on account of pain. X-ray examination February 8, 1915. Breaking down of cell walls. Mas-

toid region cloudy. Blood examination: polymorphonuclears, 75 per cent.; small lymphocytes, 10 per cent.; large lymphocytes, 1 per cent. Operation, February 8, 1915. Large mastoid, thin cortex, pneumatic half loose piece of bone on base of tip. Pus and granulation throughout mastoid. In region toward carotid artery, a gaping or tapping rhythmical noise heard (the only time the writer ever heard it.) Discharged March 2, 1915, improved.

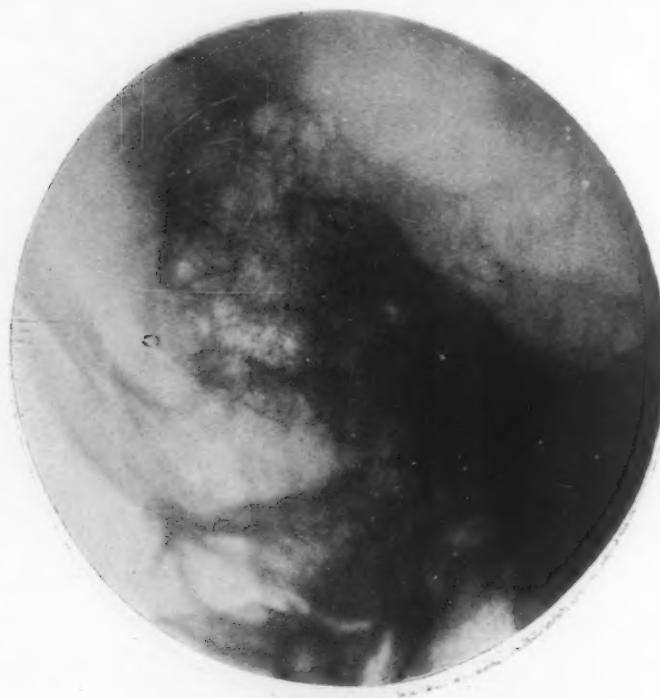


No. 2. (Left.)

No. 7. Mrs. M. D., 35 years old. Pain behind left ear about six weeks ago. Operation advised before, but patient was afraid and remained away from observation. Admitted February 14, 1915. X-ray examination: lower left mastoid fused into one large cell. Remainder of cells cloudy. Operation, February 15, 1915. Upon incision through edematous tissue, foul-smelling pus; fistula at angle of mastoid process, and posterior wall of canal at about 2

o'clock direction. Large terminal cell; granulations, free pus through whole portion of mastoid as indicated in x-ray picture and about one-half inch inwardly. Discharged February 24, 1915, improved.

No. 8. Boy, E. C., 7 years old. Admitted February 10, 1915. From hospital record: five years ago had scarlet fever. Since then, occasionally had discharge from ear. Sometime, for periods, ear



No. 2. (Right.)

discharged continuously. X-ray picture: the left mastoid looks affected. Operation, February 19, 1915. Bone inflamed, increased vascularity. Sclerosed toward antrum. Discharged February 28, 1915, improved.

No. 9. Mr. J. P., 23 years old. From hospital record: admitted March 5, 1915. Pain in left ear, February 23, 1915; bloody discharge next day, discharge continues. Some tenderness over tip of

mastoid since March 4. Patient had slight pain in chest before ear-ache began. Polymorph., 79 per cent.; small, 11 per cent.; large, 10 per cent. X-ray examination: right cells pneumatic throughout. Cells about the left antrum are sclerosed. Cells of left tip pneumatic. March 7, 1915, left drum membrane incised. No mastoid operation. Discharged March 15, 1915, improved. Relapse, re-admitted March 17, 1915. Polymorphonuclears, 66 per cent.; small



No. 3. (Left.)

lymphocytes, 25 per cent.; large lymphocytes, 6 per cent.; mast cells, 2 per cent.

Remarks. Patient has pronounced deviation of the septum to the left. Treatment besides douching, rest in bed. I follow, whenever possible, the practice of Heine-Munich, who recommends to keep patients with acute otitis media in bed. He claims that early incision of the drum membrane and rest in bed, even if the patients

have no fever and object to this procedure, have given the best results. Heine adds (B. Heine, Operationen am Ohr, 1913, page 13): that no mastoid operation was necessary in private patients treated in this manner, although he thinks they may be necessary in rare instances (see our patient No. 4). These results, he quotes as proof, are different from those in the polyclinic. I may add, the



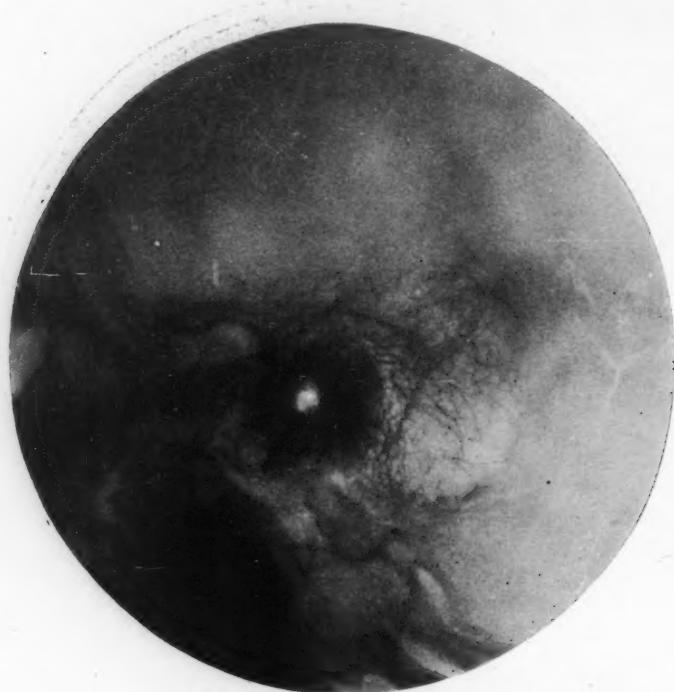
No. 3. (Right.)

general practitioner or surgeon keeps patients with appendicitis in bed.

No. 10. Dr. A.'s son, 4 years old. Otitis media acuta, incised March 9, 1915 and March 12, 1915. Apparently tenderness over left mastoid. X-ray: mastoid clear; no operation; recovery.

No. 11. Mr. N. F. From hospital record: admitted March 29, 1915. Present illness began ten days ago in a severe cold. Patient

noticed pain in each ear. Five days ago pain in ears became more severe and discharge started from each ear. The discharge has been profuse. Respiratory: depression in infra and supra clavicular spaces. Mucous rales over anterior aspect of chest. Blood count: poly., 79 per cent.; small, 12 per cent.; large, 9 per cent. Patient had considerable headache, and some tenderness over both mastoids. X-ray, March 31, 1915 (See 11a). Examination of the right and



No. 4. (Left.)

left mastoid cells shows asymmetrical condition of the cells of the two sides. On the left side the cells extend much further forward, some of them being anterior to the auditory canal. We note that in the upper cells in the posterior part of the left mastoid there seems to be a diminution in the sharpness of outline, which would be suggestive of a very mild infiltration. The septa, however, can be distinctly made out. We would think there was no destructive

process. On the right side we note that there is a very large indistinctness which is not so pronounced as on the left side. Urine: albumen March 30, 1915; no albumen April 2, 1915. Discharge from ear, culture: staph. aureus, diplococcus catarrhalis. Temp. between 100° and 98°, of septic character for a few days. April 3, 1915, left membrane tympani incised. Discharged April 7, 1915, improved. Readmitted to Harper Hospital April 19, 1915, now



No. 4. (Right.)

complaining of pain and tenderness in right mastoid region. Tenderness about one inch behind right auricle. Operation, April 19, 1915. Mastoid diploetic. Pus in mastoid. Sclerosed toward antrum. Prompt improvement. Discharged April 27, 1915. On May 1, 1915, pain developed in left mastoid in a spot about $\frac{3}{4}$ of an inch behind the left auricle. May 1, 1915, x-ray picture shows mastoid involvement (See 11b). Operation, May 3, 1915. Bone

toward antrum sclerosed. Abundant pus in body of mastoid, far back. Recovery.

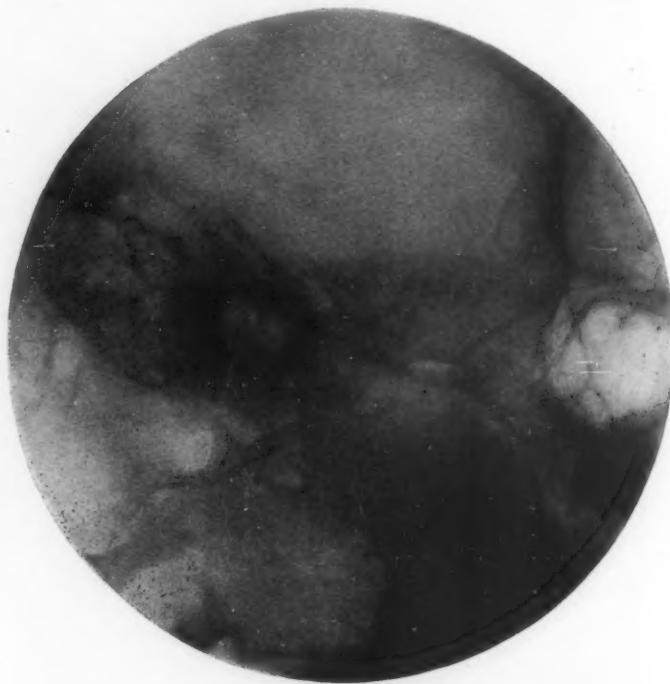
Remarks. The two pictures of the left mastoid allow a comparison concerning the progress of the affection. This shows the value of repeated x-ray examinations. The ideal way would be to have an x-ray record of the mastoids during health.



No. 5. (Left.)

No. 12. Mr. J. D., 42 years old. Admitted March 8, 1915. Complained of pain on right side of head, apparently emanating from an infiltrated spot below and behind the right mastoid. From hospital record: history of gonorrhea and syphilis about twenty years ago. Present history: began one month ago with cold in head, followed by earache for about two weeks, then pain began behind ear and upwards. Had severe headaches for a long time.

Blood examination: March 8, 1915, polymorphonuclears, 80 per cent.; large lymphocytes, 8 per cent.; small lymphocytes, 12 per cent.; March 24, 1915, polymorphonuclears, 89 per cent.; large lymphocytes, 3 per cent.; small lymphocytes, 8 per cent. X-ray, March 9, 1915, left mastoid compact with exception of small mass of cells near antrum. Right mastoid has the same formation but the cells near the antrum have broken down, forming a com-



No. 5. (Right.)

paratively large cavity. The region is cloudy, suggesting infiltration of this portion of the mastoid. First operation March 9, 1915. Tip of mastoid softened. Infiltration below mastoid persisted. At a second operation May 12, 1915, the middle cranial fossa was exposed and the antrum opened very widely. Headache persisted. A neck abscess was opened March 24, 1915, under local anesthesia by Dr. Ballin. Temperature during whole stay in hospital between

101° and normal. Wassermann (blood) reaction negative. Clinically syphilis, report of dermatologist Dr. Varney, clear. Antisyphilitic treatment makes headache disappear. Recovery prompt.

No. 13. Dr. M.'s son, 5 years old, seen April 11, 1915. Left ear had been incised. Incised again April 15, twice. Otitis media acuta. Mastoid tenderness developing. X-ray: first degree mastoid; no operation; recovery.



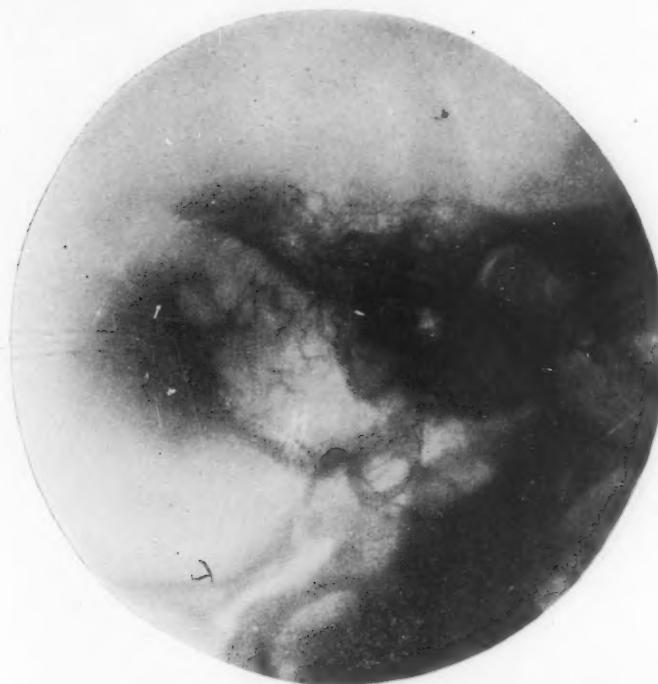
No. 6. (Left.)

No. 14. Mrs. J. B., aged 56. Admitted April 20, 1915. Pain and tenderness in left mastoid about six weeks. Discharge in left ear over four weeks. Swelling above and behind left ear. Urine, acid 1038; albumen faint; sugar present. X-ray picture shows mastoid involvement. Operation, April 21, 1915, under gas anesthesia, and locally one-half of one per cent. novocain subcutaneously.

Mastoid cells appeared affected. Two counter-openings in edematous tissue above mastoid. Discharged May 1, 1915, improved.

From the literature the following may be mentioned:

Politzer remarks (Textbook, 1908), that x-ray examinations are indicated in the following pathological processes: (1) Foreign bodies (projectiles). (2) Injuries (fractures of the base). (3)



No. 6. (Right.)

Malformations. (4) Hyperostosis. (5) Destructions: by inflammatory processes, cholesteatoma, sequesters or tumors. In the latter it is especially important to see whether they reach the dura of the middle or posterior cranial fossa (resp. the sinus). H. E. Kanasugi differentiated with the aid of roentgenoscopy the pneumatic from the diploetic mastoid. He confirmed Politzer's findings that small and short mastoids show a diploetic structure and large mastoids a

pneumatic structure and that a favorable relation concerning the location of the lateral sinus exists in pneumatic mastoids.

Rudolf Leidler (Clinical Roentgen Findings in Ear Patients), reports the findings in four patients in the *Archiv. für Ohrenheilkunde*, Vol. 85, Parts 1 and 2. In a male 60 years old there was on the right side incomplete peripheric facial paralysis and severe pain in the ear radiating toward the neck and head, especially severe



No. 7. (Left.)

when swallowing; no mastoid tenderness on pressure, but granulations in the tympanic cavity. Histologically they consisted of flat epithelial cells. A diagnosis not possible (Prof. Albrecht). Only the x-ray picture allowed the diagnosis and topographical location of the tumor.

Case 2. Female, 68 years old, suffered from a carcinoma emanating from the tympanic cavity. This was diagnosed also clinically,

yet the size and topography of the tumor was only recognized by the x-ray.

Arthur H. Cheatle, London, at the Ninth International Otological Congress, reported an examination of both temporal bones from 120 individuals in reference to the question of symmetry in health and disease, without reference to x-ray examinations. This report is very important because we assume that, as a rule, the mastoid



No. 7. (Right.)

processes are similarly constructed on both sides. Speaking under the heading of (A), In Health; (2) The Interior, Cheatle says: "Classification of the types is founded on the conditions of the outer antral wall and mastoid process. In referring to the mastoid process, the terms 'upper and lower mastoid' are used, the 'upper mastoid' being the bone below the level of the apex of the antrum down to the upper level of the projecting part or 'lower mastoid.'

On this basis it is found that of the 120 sets, 82 are symmetrical and 38 asymmetrical. In many of the asymmetrical bones there is a tendency to symmetry. It may be here stated, that there are very few cellular bones without remains of diploe, either as a small mass at the extreme tip of the mastoid process, or as a rim around the tip." As examples may be mentioned asymmetrical, e. g.,



No. 8. (Left.)

(b) Diploetic infantile type on one side. Dense outer antral wall with a few cells in the upper part of a diploetic mastoid on the other.

(c) Diploetic infantile type, on one side; dense outer antral wall, cellular upper mastoid and diploetic lower mastoid, on the other.

- (d) Diploetic infantile type, on one side; cellular antral wall and upper mastoid and diploetic lower mastoid, on the other.
- (e) Diploetic infantile type on one side; cellular outer antral wall and entire mastoid on the other.

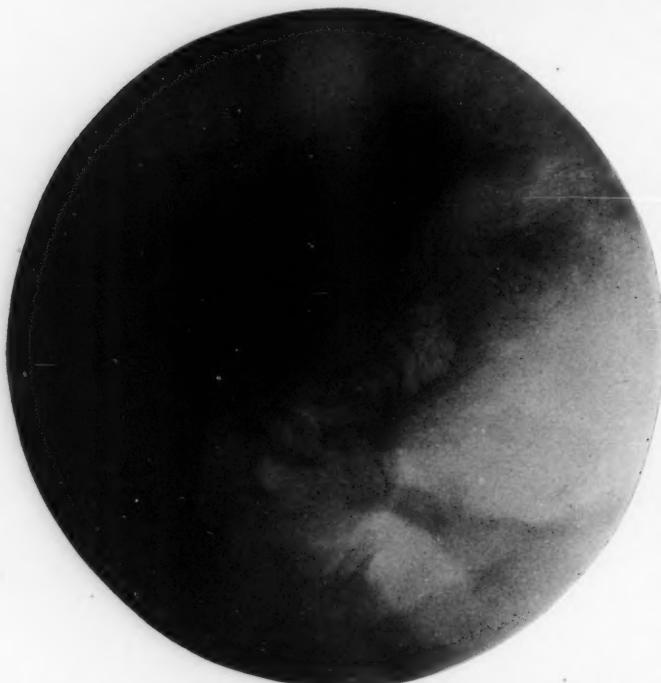
c, d and e-explain why, in acute bilateral antral infection a mastoid abscess may result on one side and a chronic discharge without a mastoid abscess on the other. Those specimens which have



No. 8. (Right.)

only a dense outer wall and very few cells in the upper part of a diploetic mastoid have the same surgical importance with regard to the suppuration as the pure diploetic type, and the same applies to those bones in which the entire mastoid is composed of cells surrounded by a thick layer of dense bone. There are, therefore, twenty sets in which the diploetic infantile type is seen on one side only.

Later on, Cheatle states, under the heading, "In Disease," that it can be pointed out to those who hold that the dense outer antral wall is the result of chronic suppuration, that the condition is present in this series without any signs of suppuration, on both sides, in 18, and on one side in 16. He adds that it can be confidently expected that in future, x-ray photography will be of the greatest value in the diagnosis and treatment of suppurative disease.



No. 9. (Left.)

Leidler and Schueller (The Anatomy of the Human Temporal Bone in the Roentgen Picture—*Archiv. für Ohrenheilkunde*, Volume 82, parts 3 and 4), come to the following conclusions:

"The mastoid process is always distinctly recognizable. We can see its shape, whether long or short, broad or narrow—whether it is diploetic, mixed or pneumatic. In the two latter instances we can form a judgment concerning the size and arrange-

ment of the cells and their extension in the rest of the temporal bone (squama and pyramid). We further can see whether the corticalis is thick or thin, and in many cases we can announce the thickness in millimetres. A terminal cell, if present, is mostly plainly visible. The Roentgen picture gives us a definite idea concerning the shape, size and position of the outer auditory meatus. It mostly appears as a round or oval lightened area (*Aufhellung*) of a vari-

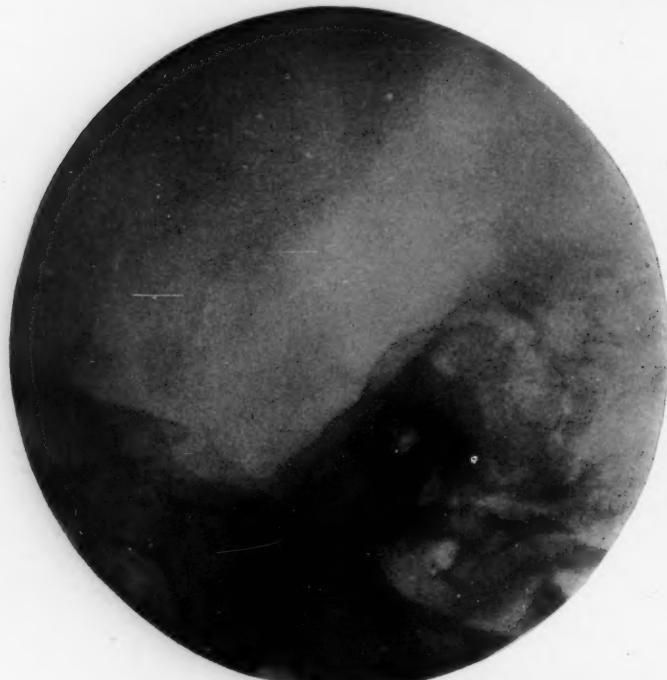


No. 9. (Right.)

able size, in which one sees the details of the inner auditory meatus and sometimes also of the cochlea. On three sides, namely, anteriorly, inferiorly and posteriorly, it is surrounded by the os-tympanicum, which is always plainly visible and has a typical shape in the adult which is characterized by a part adapting itself bow-like around the ear canal and a continuation which goes parallel to the mastoid process and is of various width and length. Only in Speci-

men 6, the anterior portion of the os-tympanicum passes the auditory canal. In children this bone forms a more or less broad ring.

The petrous bone represents itself as a triangle, sometimes long and narrow, sometimes short and broad. One can plainly recognize whether it is constricted or dense, or spongeous bone, and how large the labyrinthine kernel is. In children the pyramid forms



No. 10. (Left.)

an oblong, narrow triangle. If we now turn our attention to the finer formation of the labyrinth we must see that one can recognize always the inner auditory canal. The vestibulum in twelve, the semi-circular canals in seven, and the cochlea in one hundred and thirty-three specimens. *The topographical relation of the inner auditory canal, the vestibulum and the cochlea is, in children and in adults, constant. The vestibulum always borders posteriorly and*

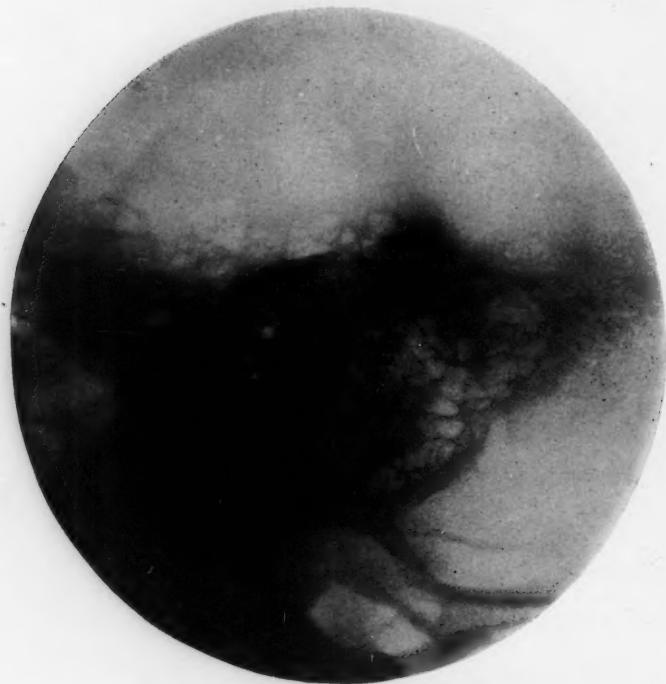
upwardly upon the inner auditory canal, whereas the cochlea surrounds it anteriorly and inferiorly. The inner auditory canal forms a lighter (Aufhellung) field which is mostly sharply defined in the posterior upper part of the auditory canal, which frequently extends beyond the contour of the same. The size of the same varies. It reaches, however, at the most, one-third the size of the outer ear canal. Once in a while the inner auditory canal contains a picture



No. 10. (Right.)

which cannot be explained at the present time. In Specimen No. 1 the inner auditory canal is exceptionally more visible in the anterior upper border of the outer external canal. Nevertheless, in this case also the topographical relations between the inner auditory canal, the vestibulum and cochlea are the same. The vestibulum in unfilled specimens shows itself as mostly little differentiated, more or less sharply outlined light field (Aufhellung) upwards

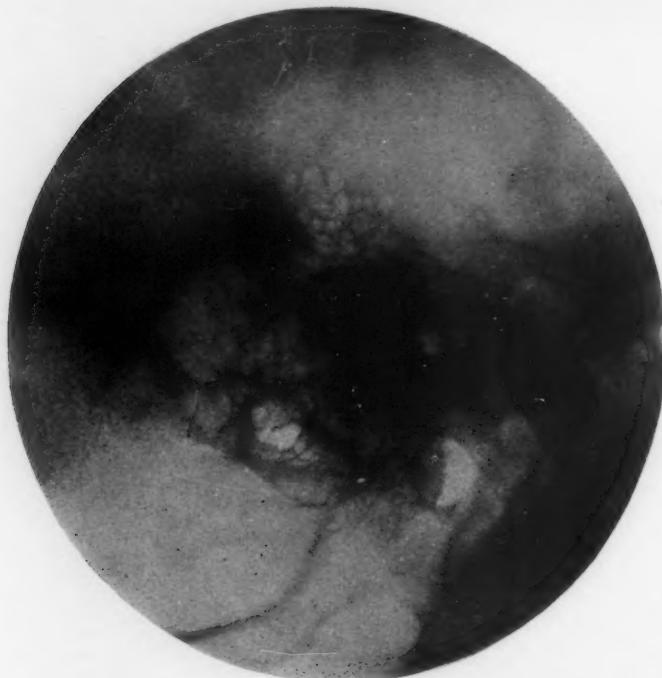
and behind the inner auditory canal, which never reaches the clearness of the latter. In size and shape varying, it is sometimes in children very large, sometimes only recognizable as a small strip. Frequently its size is determined by the attachments of the semi-circular canals. A distinct influence of the quality of the bone (whether diploetic or pneumatic) concerning the visibility of the vestibulum, cannot be shown.



No. 11a. (Left.)

The semi-circular canals, which are plainly visible in temporal bones of children, can be seen in adults only imperfectly. Mostly the posterior semi-circular canal is seen. The possibility to see the semi-circular canal seems to be greater in pneumatic than in diploetic temporal bones. Of our specimens, five pneumatics show three, four diploetic only one semi-circular canal.

The cochlea in unfilled specimen can always be seen in children, rarely in adults. It forms a lightened field (see specimen 1, 7, 11) of varied size anteriorly and below the inner auditory canal, lying within the contour of the external auditory canal, and usually of weak depiction. It cannot be shown that the quality of the bone has any influence upon its visibility. Five pneumatic temporal bones show the cochlea twice,—four diploetic the cochlea once.



No. 11a. (Right.)

The region of the tegmen, where the contour of the upper surface of the pyramid meets the squama, shows pretty variable conditions. Occasionally the thickness and position of the tegmen can be determined directly (frequently in children). Mostly, however, one sees two contours, of which one corresponds to the upper edge of the pyramid, the other to the projection of the upper surface of the pyramid (frequently as a hunch superimposed upon the

latter.) The antrum shows the most variable findings in the Roentgen picture. It is mostly plainly visible in young children, forming a well outlined, relatively large lighter area within the pyramid backward and upward of the outer external canal, reaching frequently to the tegmen. In adults the findings vary from perfectly plain visibility to entire invisibility. *The quality of the bone is of essential influence concerning the visibility. In five pneumatic tem-*



No. 11b. (Left.)

poral bones unfilled, one only, and in four diploetic ones, four show the antrum. The antrum shows mostly a more or less plain lighter field within the pyramid. Mostly it is not sharply outlined and shows a weak depiction. The position of this lighter field and of the antrum in general is also not constant. Among nine filled specimens the antrum is found five times anteriorly and upwardly of the labyrinthine kernel in the pyramid and reaches to the tegmen. In

one case it takes the whole width of the pyramid above the labyrinthine kernel, and reaches from the contour of the posterior to that of the middle cranial fossa. In three cases it lies within the spongiosa. *All in all, we must say that the antrum that is not directly visible must be looked for mostly anteriorly and above the labyrinthine kernel near the region of the tegmen.* In two specimens (unfilled) also the attic is visible as a distinct narrow lighter



No. 12. (Left.)

field between the upper contour of the outer external canal and the tegmēn. In four filled specimens it is visible always in the same location, always in connection with the antrum.

The sinus is plainly visible in all specimens. It possesses various widths and various degrees of curvature. *At present one cannot form a certain judgment concerning its depth, but the degree of the intensity of the lighter field is proportionate to its depth, so that*

one can draw the conclusion that a very intense lighter field speaks for a very deep sinus. Also the appearance of the jugular bulb frequently allows us to draw an inference concerning the depth respectively of the forward position of the sinus. The bulbus is frequently visible as a more or less plain lighter field in the spongiosa of the pyramid in the posterior angle of its triangle. Not infrequently it also shows an arched outline. One can draw an inference



No. 12. (Right.)

concerning the height of the bulbus from the height of this lightened field, respectively of the curvature of the arch in the pyramid, and also concerning the depth of the sinus, because a high bulbus corresponds also to a deep sinus. Among eleven temporal bones of adults, the bulbus could be plainly seen eight times. Sometimes the bulbus approaches the lower border of the outer external canal. In specimen No. 1 the contour meets the posterior lower quarter of

the outer external canal. It cannot be shown that there is a difference in this respect in pneumatic or diploetic bones. The emissarium mastoideum is always plainly visible.

Ingersoll, in a paper entitled, "The Value of Stereoscopic Radiographs of the Head," read before the Academy of Ophthalmology and Oto-Laryngology, 1914, claims that stereoscopic radiographs of the mastoid give us very much positive information in regard to



No. 13. (Left.)

pathological conditions. At the same meeting Dr. J. J. Kyle, of Los Angeles, says:

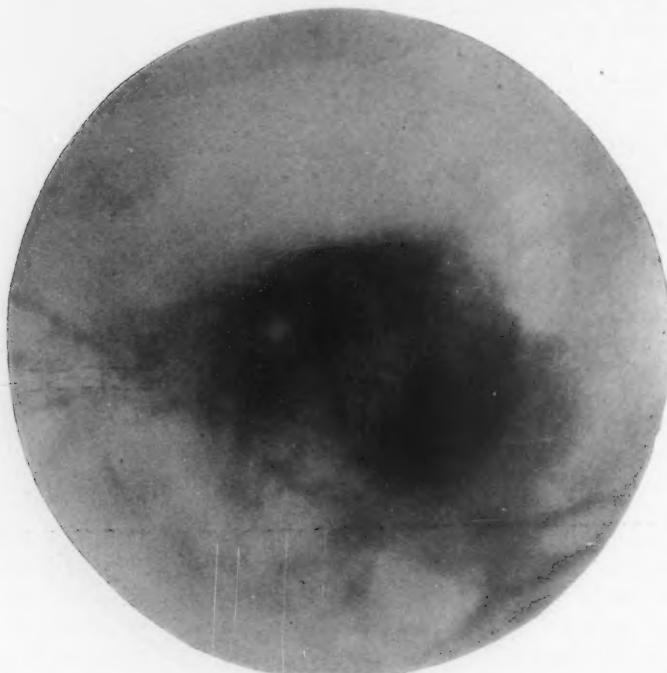
"As a confirmatory evidence of the existence of an acute mastoiditis, the value of radiography cannot be overestimated. The findings are as positive as in nasal sinus disease and even more so. In a case in which the operator is inclined to procrastinate or feel over-conservative or in doubt, a radiograph should be made."



No. 13. (Right.)

CONCLUSIONS.

1. The value of the interpretation of x-ray pictures of the mastoid affections would be materially enhanced if we had the pictures during health for comparison.
2. Repeated x-ray examinations are of great assistance.



No. 14. (Left.)

3. The findings, especially of Cheattle, are an important factor in the interpretation of x-ray pictures.
4. In many cases the x-ray picture is undoubtedly of great help in the diagnosis.
5. An x-ray picture gives us an idea of the extent of the mastoid cells and of the character of the mastoid.
6. Some changes in the picture may be expected in any middle-ear suppuration.

7. It seems not possible to differentiate sufficiently the changes which may be found in any middle-ear suppuration from those indicating more serious involvement. Therefore, the clinical symptoms are of paramount importance.

8. A negative x-ray picture of a patient with pronounced clinical symptoms must not be relied upon as excluding the seriousness of the affection and its complications.



No. 14. (Right.)

9. The x-ray examination should be added to the routine examination of the mastoid.

The numbers underneath the plates refer to the cases of the author, not to the cases mentioned in the bibliography.

David Whitney Building.

THE LARYNX IN ONE HUNDRED CASES DYING OF
PULMONARY TUBERCULOSIS. A CLINICAL
POST-MORTEM STUDY.*

DR. GEORGE FETTEROLF, Philadelphia, Pa.

This paper is the outcome of an attempt to ascertain to what degree those dying from pulmonary tuberculosis suffer from tuberculous disease of the larynx. The material studied consisted of the larynges of one hundred patients who had died at the Henry Phipps Institute, and who had had autopsies performed on them by Drs. C. Y. White or P. A. Lewis, Pathologists. In each case the larynx had been removed and examined at autopsy simply for the presence or absence of tuberculous disease. It had then been hardened in formalin and later transferred to alcohol. To have conducted this investigation on fresh material would have been better, but this was impossible, as the hour of holding the autopsies precluded the attendance of the writer.

The specimens were studied in the following way: The upper margin of the epiglottis and of the aryteno-epiglottic folds, and the upper surface of the arytenoid cartilages were first examined. Then the tongue was cut away flush with the anterior surface of the epiglottis to allow of careful study of the latter. Following this, the hypopharynx and the esophagus were split posteriorly and turned aside, so as to expose the posterior surface of the arytenoids. Then the hyoid bone was divided with bone forceps, and the epiglottis and the thyroid and cricoid cartilages were split in the anterior median line. The larynx was then cautiously spread apart, so as not to tear the posterior commissure, and all hardened and adherent sputum was removed from the interior of the larynx and its ventricles. After a study of the laryngeal interior a posterior vertical cut was made between the arytenoid cartilages and through the signet part of the cricoid. Following this, twelve pieces were cut out for microscopical study, the removed portions being one from each half of the epiglottis, both aryteno-epiglottic folds, both arytenoids, a section of each vocal cord, a section of each ventricular band, and a section from each half of the interarytenoid tissue. When gross lesions were present the segments were cut so as to include them.

*From the Henry Phipps Institute of the University of Pennsylvania.

†Candidate's Thesis, presented to the American Laryngological Association, 1914.

The present report will deal only with the gross appearance, the microscope findings being left for a future communication.

Of the patients from whom the specimens were removed, sixty-eight were male and thirty-two were females. This discrepancy is apparent only and is due to the fact that the Phipps Institute at that time had accommodations for twice as many male as female patients.

Of the one hundred cases eighty-three showed gross tuberculous lesions, thirteen showed absence of disease and four were doubtful. In other words, eighty-three per cent. of these one hundred patients dying from pulmonary tuberculosis or its complications had definite gross tuberculous involvement of the larynx. The probability is that the percentage of those having actual disease is greater than eighty-three, for unquestionably some of those which appeared normal to the unaided eye will show tubercle formation under the microscope.

GENERAL SUMMARY.

| | |
|-----------------------|-----|
| Tuberculous | 83 |
| Non-tuberculous | 13 |
| Doubtful | 4 |
| Total | 100 |

EPIGLOTTIS.

| | |
|--|-----|
| Tuberculous | 59 |
| Non-tuberculous | 37 |
| Doubtful | 4 |
| Total | 100 |
| Infiltration | 20 |
| Infiltration with superficial ulceration | 19 |
| Infiltration with deep ulceration | 4 |
| Superficial ulceration | 10 |
| Deep ulceration | 4 |
| Tuberculoma | 2 |
| Total | 59 |

ARYTENO-EPIGLOTTIC FOLDS.

| | |
|---|-----|
| Tuberculous | 58 |
| Non-tuberculous | 42 |
| Doubtful | 0 |
| Total | 100 |
| Infiltration only | 27 |
| Infiltration with edema | 22 |
| Infiltration with superficial ulceration | 7 |
| Infiltration with superficial and deep ulceration | 1 |
| Deep ulceration | 1 |
| Total | 58 |

VENTRICULAR BANDS.

| | |
|-----------------------|-----|
| Tuberculous | 42 |
| Non-tuberculous | 57 |
| Doubtful | 1 |
| Total | 100 |

| | |
|--|----|
| Infiltration | 18 |
| Infiltration with superficial ulceration | 11 |
| Superficial ulceration | 7 |
| Deep ulceration | 6 |
| Total | 42 |

VOCAL CORDS.

| | |
|--|-----|
| Tuberculous | 49 |
| Non-tuberculous | 51 |
| Total | 100 |
| Infiltration | 10 |
| Infiltration with superficial ulceration | 7 |
| Infiltration with deep ulceration | 6 |
| Superficial ulceration | 18 |
| Superficial and deep ulceration | 4 |
| Deep ulceration | 4 |
| Total | 49 |

ARYTENOID CARTILAGES.

| | |
|--|-----|
| Tuberculous | 57 |
| Non-tuberculous | 43 |
| Total | 100 |
| Infiltration | 44 |
| Infiltration with superficial ulceration | 8 |
| Infiltration with deep ulceration | 3 |
| Deep ulceration | 2 |
| Total | 57 |

INTERARYTENOID SPACE.

| | |
|------------------------|-----|
| Tuberculous | 51 |
| Non-tuberculous | 49 |
| Total | 100 |
| Infiltration | 47 |
| Superficial ulceration | 2 |
| Total | 49 |

The epiglottis. This cartilage was involved in fifty-nine cases, was free of disease in thirty-seven and was of doubtful appearance in four. Here again the microscope will probably increase the number of cases in the positive list. This much, however, can be stated: over half of the dying cases of pulmonary tuberculosis will present to the clinician infiltration or ulceration of the epiglottis. A practical corollary to this statement is that over half of the dying tuberculous will need relief for the pain they suffer in swallowing. Involvement of the epiglottis practically always causes odynophagia, and a sad feature is that there exists no adequate local method of giving relief, short of some surgical procedure. And the cases in which the latter can be used are few, on account of the small number of consumptives, taking the world over, to whom skilled laryngologic technique is available.

The form, location and multiplicity of the lesion varied greatly. Naturally, the different forms are simply different stages or phases of the tuberculous invasion, and they are described more from the clinical than from the pathological point of view.

Infiltration. This manifests itself clinically as thickening and, in life, congestion. Incidentally, pallor is rarely, if ever, seen in diseased parts of the tuberculous larynx. In an uninvaded larynx in a tuberculous patient, the mucosa may be pale, as part of a general cachectic pallor, but where the tuberculous process exists there will be found congestion contiguous to it.

Infiltration alone was found in twenty of the fifty-nine cases, and in each one of the twenty both halves of the epiglottis were involved. In only two of the twenty was the infiltration more marked on one side than on the other. This is as would be expected, for there is no part of the larynx, with possibly the exception of the interarytenoid space, which would be less affected by a more or less constant, one-sided decubitus and consequent accumulation of bacillus-laden sputum, than would be the epiglottis.

In nine of the twenty, the thickening was confined to the upper edge and in five of these nine to the central part. In one case there was associated with the infiltration a large tuberculoma which covered the cushion and the area immediately below it. In another there was found marked edema of the supralingual portion of the epiglottis; a curious feature of this case was that the edema was confined absolutely to the anterior surface of the cartilage, the posterior surface being unaffected.

Infiltration with superficial ulceration. This represents a later stage than mere infiltration and was found almost as frequently, nineteen cases presenting this combination. Of these nineteen, eighteen involved both halves of the epiglottis, but a single case being limited to one side.

The ulcers varied in number, in five cases there being but one; in the others they varied from two up to a large number. No enumeration was made of those presenting a large number.

As regards location, they showed a marked predilection for two sites, viz., the upper edge and the laryngeal surface. In but one instance were there any found on the lingual surface; in this specimen there were many erosions and they were widely distributed over the laryngeal and lingual surfaces, as well as on the free edge. Evidently the anterior facies is not as vulnerable as it looks. Comparing the appearance of the two surfaces, the laryngeal certainly looks tougher than the lingual. This, in combination with the thought that infective sputum would tend to gather in the glosso-

epiglottic fossae, would *a priori* suggest the anterior surface as a likely spot for infection. Such is evidently not the case, however. Those parts of the cartilage which are most exposed to the air, food and sputum streams show the preponderance of infection. With these findings in mind one is tempted to conclude that the anterior facies of the epiglottis should be regarded clinically as a part of the mouth and the posterior facies as a part of the larynx.

The single ulcers were located as follows: four were on the upper edge and one, quite large and very shallow, was situated on the cushion near the median line. In one of these specimens one-half of the cartilage was almost completely denuded of epithelium and associated with it was a large tuberculoma on the laryngeal surface.

When the free margin is involved, both in infiltrative as well as in ulcerative lesions, the upper is much more frequently involved than are the lateral edges, probably on account of a poorer blood supply, but possibly, too, on account of its being more in line with the glottis and the exhaled sputum.

Infiltration and deep ulceration. This combination was found in four cases. In one it consisted of a single ulcer on the free margin, with the cartilage protruding from the base as a knife-like edge; in the second there were numerous small ulcers on the laryngeal surface, and extending into the cartilage; in the third there were ulcers on both surfaces, as was also the case in the fourth along with similar lesions of the free edge.

Infiltration with superficial and deep ulceration. Three cases fell into this group, and in all of them the general involvement was of the same plan, viz., thickening and shallow ulceration of the free portion, with deep ulcers in the neighborhood of the cushion.

Superficial ulceration. In this group are placed those cases which presented ulcers, with no infiltration except immediately around the ulcer. There were found ten of these, and in each one the involvement was bilateral; the ulcers were multiple in every instance. Of the two surfaces of the cartilage, but one, the laryngeal, was affected, and all of the ten cases were confined to this facies, with one exception, and in this the upper edge was involved. In one case the cushion was the only part affected.

Deep ulceration. This group is intended to include those cases in which there had been marked loss of tissue. Four cases answered the description; in two the whole upper edge of the epiglottis had sloughed away, in the third the entire left edge was gone, and in the fourth the cartilage was bare at the upper edge for the length of 1 cm.

Tuberculomata were found springing from the laryngeal aspect of the epiglottis in two instances. Both of them were sufficiently large to hide most, if not all, of the cords during life. They must have interfered to some extent with the respiratory act.

The aryteno-epiglottic folds. Fifty-eight cases showed positive gross evidence of tuberculosis of these structures, fifty-seven bilaterally and one unilaterally. As a rule, these folds do not become affected early in the disease, and it is therefore natural to expect the involvement to have become bilateral when the invasion has extended this far. This fold is rarely the primary site of the laryngeal disease, its infection usually being secondary to that either of the epiglottis or of the arytenoid, or more rarely of the ventricular band.

Infiltration only was found in forty-eight of the bilateral cases and in the single unilateral case. There was no great tendency shown toward the localization of the disease in any particular portion, although in a few instances certain parts showed a preponderance of disease. In eight the cartilages of Wrisberg were the most notably hypertrophied, while in two the infiltration was confined to the arytenoid end of the fold. In six the amount of swelling was greater on one side than on the other. Distinct submucous tubercles were visible in three, in one instance being confined to the mesial surface, and in another to the same surface and to the superior margin.

Edema in conjunction with infiltration was found in a surprising number of instances. This condition was assumed to be present when the mucosa was found to be markedly shriveled, and was noted in twenty-two of the forty-nine infiltrated cases. This is probably explained by the loose histological texture of the fold, and this structural condition probably is the reason why so few of the tuberculous lesions found here are ulcerative. The looseness of the tissue allows of ready infiltration, and clinically it is sometimes quite astonishing to see with what rapidity a tuberculous process will advance along this fold from a red and swollen arytenoid, or from an epiglottis in the same condition. Again, the comparative infrequency of ulcers may be due to the fact that large areas of submucous tissue may be extensively infiltrated or caseous before the pressure becomes sufficiently great to cut off the surface blood supply and cause necrosis of the mucosa.

Infiltration with superficial ulceration occurred in seven cases, in four of these the disease being of similar degree on both sides; in the other three the infiltration was on both sides, but the ulcerative process was on only one. In one of the former the process was so

extensive that the fold was practically denuded of epithelium. In another there were submucous tubercles on both sides, but on only one had these become confluent and opened on the surface. In a third the ulcers were noted as appearing on the internal surface only.

Infiltration with superficial and deep ulceration was found in but one instance. In this specimen the disease was very extensive, there being no portion of the larynx unaffected by the tuberculous process.

Deep ulceration alone was found once. This was in a specimen in which the disease was very general and far advanced. Deep, ragged ulcers were found on both surfaces of the epiglottis, on one ventricular band and on both arytenoids. Thus surrounded, there is every reason why the folds should have been so extensively diseased.

Associated disease. Of the fifty-seven bilateral cases, forty-four were associated with tuberculosis of both arytenoids and forty-two with similar disease of both halves of the epiglottis. Two presented concomitant disease of both arytenoids, but of only one-half of the epiglottis. Five of the fifty-seven bilateral cases had associated involvement of the arytenoids only and one of the epiglottis only. In three of the bilateral cases the fold presented evidence of disease independent of both the epiglottis and the arytenoids. Of these three specimens, two showed no sign of disease anywhere else in the larynx, while one had an associated involvement of one vocal cord.

The ventricular bands. Forty-two cases showed undoubtedly tuberculosis of the ventricular bands and one was doubtful. Of the forty-two, thirty-eight were bilateral and four were unilateral. This is as would be expected, for these structures are not of those which are the most susceptible to tuberculous invasion, and therefore, they are usually involved in the later stages of the disease, where the tendency toward widespread involvement is more pronounced. They infrequently are involved alone. Occasionally, in the living, one will find a larynx in which a single vocal cord is hidden to a greater or less extent by an infiltrated and swollen ventricular band, but these cases do not occur with any great degree of frequency.

Of the thirty-eight bilateral cases, thirty-two presented similar lesions on the two sides. This is another point tending to show that isolated lesions of this part of the larynx are rare and that involvement of the bands is indicative of a general rather than a localized process. Additional evidence of this is furnished by the fact that in thirty-six of the thirty-eight practically the entire larynx was involved in the tuberculous process.

Infiltration. Eighteen of the thirty-six, just half, were simply infiltrated, the evidence in general being a thickening of the band and a rounding of its free edge. In three the mucosa was quite shriveled, and a fair assumption is that this condition is a vestige of edema which had existed during life. In one the tissue of the band was peculiarly spongy in texture, a condition whose pathology must be left to microscopical examination for interpretation. In one the normal band tissue was entirely replaced by irregular nodular tissue. This same condition prevailed on the arytenoids and cords, and the epiglottis was the seat of a large tuberculoma. This larynx probably is a good specimen of the hyperplastic form of the disease, and should prove very interesting under the microscope. In another specimen the mucosa of one band was quite shaggy; possibly this is another case of hyperplasia similar to the one just described. Two specimens showed a preponderance of infiltration of one side over the other. This is a very small proportion and points still further to the probability that involvement of the bands occurs seldom except when the invasion is quite general.

Infiltration with superficial ulceration was found in three cases and was bilateral in all three. In one there was present infiltration alone on one side, and a superficial ulcer on the other, while in three others one band was infiltrated and the other was the seat of a deep ulcer. All three of these ulcers were just above the vocal process of the arytenoid and extended sufficiently deep to expose the cartilage.

Of the four unilateral cases, all presented simple infiltration only. One was associated with bilateral ulceration of the epiglottis and one with a similar condition of the vocal cord of the same side.

Superficial ulceration. This stage of the disease was found in seven of the thirty-eight bilateral cases. In two the ulcers were confined to the lower surface, and were really ulcers of the upper boundary of the ventricle. In one the band was practically denuded of mucous membrane and was studded with tubercles. Had this patient lived longer, these tubercles probably would have become confluent and broken down, resulting in an extensive destruction of the laryngeal interior.

Deep ulceration. This is noted as having occurred in four of the thirty-eight bilateral cases. In two the bands shared in large, ragged ulcers which were located on the anterior aspect of the arytenoids. In a third the bands were involved coincidently with the epiglottis in large, deep ulcers situated near the lower end of the latter.

In two cases one band was ulcerated superficially and the other deeply. In both of these the more advanced lesion was at the vocal process and in one was shared in by the vocal cord.

Associated laryngeal disease. As bearing on the conclusion that involvement of the ventricular bands is likely to occur only late in the disease and as part of a generalized process, it is interesting to note to what degree the other parts of the larynx were involved in cases which showed infection of the bands. The figures in this connection are as follows, and, like all the enumerations in this article, they probably would be altered slightly were the observations checked by microscopical study:—

| | |
|---|--------|
| All the rest of the larynx..... | 32 |
| Epiglottis, aryteno-epiglottic folds and arytenoids..... | 1 |
| Epiglottis, aryteno-epiglottic folds and vocal cords..... | 1 |
| Epiglottis, arytenoids and vocal cords..... | 1 |
| Aryteno-epiglottic folds, arytenoids and vocal cords..... | 1 |
| Total | 36 |

Thus, in thirty-six of the thirty-eight, practically the entire larynx was involved.

The vocal cords. Either both or one of these structures were involved in forty-nine cases, both sides being affected in forty-two and one side in seven.

Infiltration alone was noted in ten cases, all of them bilateral. In one of these there was a large tuberculoma on the epiglottis, while the rest of the laryngeal interior was markedly nodular. The cords were very irregular and were dotted with tubercles on both their upper and mesial surfaces. In only one was the involvement more marked on one side than on the other, the remainder showing about the same amount of disturbance on the two sides. In one there was a marked roughness on only the free edge. In but one was there any edema.

The combination of later stages than infiltration with this condition was found to be more varied and protean than in any other part of the larynx.

Infiltration with superficial ulceration was found bilaterally in three instances, and in a fourth one side presented this combination, while the other was infiltrated only. Infiltration of one cord with superficial ulceration of the other was found once.

Infiltration with superficial ulceration of one cord without any involvement of the other was seen in two instances. In one there was a single shallow linear ulcer on the adductor margin and anterior to the vocal process, while in the other there were two such ulcers.

The combination of *infiltration with deep ulceration*, the condition being present on both sides, was found but once. This specimen was rather unique in that the greatest amount of involvement, and all of the necrosis was in the anterior part of the cords. This case is a reminder to the writer of another rare lesion seen in the living. Both cords in this instance were red and granular, and eventually they both ulcerated at their anterior halves. Subsequent to this the cords began to fuse, until finally they were joined absolutely into one broad, white sheet in their anterior half. Posteriorly there was left a small, rounded glottis, which was adequate for respiration; the voice was a whisper only.

Infiltration with deep ulceration of one cord, the other being normal, was noted once. The ulcer was a large, ragged one and was located just in front of the vocal process of the arytenoid cartilage.

Infiltration of one cord with infiltration and deep ulceration of the other was noted in one instance, the ulcer being at that favorite site for such lesions, viz., the vocal process of the arytenoid. Infiltration of one cord with deep ulceration of the other was observed once.

Infiltration and superficial ulceration of one cord with infiltration and deep ulceration of the other was found twice. The shallow ulcers were found on the ventricular and infraglottis surfaces of the one cord, while the deep ones were located at the vocal process. In one of these cases a small pedunculated growth was found attached to the anterior part of one cord.

Superficial ulceration was observed in eighteen specimens, bilaterally in fourteen and unilaterally in four. In four specimens the ulcer was of the nature of a shallow fissure. These usually started at the vocal process and extended forward on the adductor margin for a varying distance. In only one specimen were they on the superior surface of the cord. They were of the rounded form in ten cases and nine of these were situated at the vocal process. In the tenth the lesion of one side was small and located at the vocal process, while that of the other involved the posterior two-thirds of the approximating surface.

Deep ulceration was present in four of the specimens, all bilateral and all situated anterior to the vocal process. In one the entire floor of the ulcer was studded with tubercles.

The arytenoid cartilages. These structures were involved in fifty-seven of the one hundred cases. A rather curious feature is that all of them were bilateral, not a single specimen of the series showing disease of one cartilage alone. At the same time it should

be stated that in a number of instances the involvement was greater on one side than on the other.

Infiltration only was present in forty-four of the series and in two it was noted that the cartilages were of huge size. These were both of that clinical type, seen rather rarely, in which the larynx, especially the upper ring, composed of the epiglottis, the aryteno-epiglottic folds and the arytenoids, becomes tremendously infiltrated and remains so. These cases may cause little discomfort, and they may hang fire for months, or as seen by the writer in two instances, for years, the patient dying of tuberculosis but the larynx apparently being a very slight factor in his illness.

In one of the forty-four the arytenoids were very nodular and irregular, as was the entire larynx, and in another, submucous tubercles were visible in the upper portion, not a frequent feature of tuberculosis of the arytenoids.

The infiltration was notably greater on one side in six of the specimens.

Edema of the infiltrated arytenoids was present in twelve of the forty-four. In one of these it was noted as being "tremendous," in a second as "marked," while in a third it was present on only the posterior surface. This condition of the last specimen must have caused serious mechanical interference with swallowing.

Infiltration with superficial ulceration occurred in eight cases. In seven the lesion was symmetrical, the eighth showing infiltration of both sides with ulceration of but one. In but one of these was the arytenoid of any very great size, this specimen showing infiltration to the size of a cherry. In three of the eight the ulceration extended beyond the laryngeal surface of the cartilage, two of them being involved on their pharyngeal and one on the superior surface. In one of the four the cartilages were practically denuded throughout of epithelium, a condition which must have been productive of hideous suffering.

Infiltration with deep ulceration was found in three cases, each differing from the other. One showed marked enlargement of the cartilages, with deep, ragged ulcers at both local processes. A second showed marked infiltration of both arytenoids, with a deep, narrow ulcer at the vocal process on one side only. In the third, both were infiltrated, while one was the site of a small, shallow ulcer and the other of a very deep one which bared clearly the vocal process.

Deep ulceration only was noted twice, in one instance, deep, symmetrical ulcers being present at the vocal process, and in the other,

one being above this process and the other on the laryngeal aspect of the cartilage.

The interarytenoid space. This area was found to be involved in forty-nine specimens, and in none of them were found conditions which endangered life. Usually the earliest signs of the disease are found here, and undoubtedly a much larger proportion than forty-nine per cent. would show microscopic evidence of disease. Here is frequently found the cause of the early hoarseness so frequently noticed, but this depends on the position of the lesion. If the latter is low down and between the vocal processes, hoarseness is early evident, but, on the other hand, there may be quite large masses present in the upper part of the space without any notable vocal change. Indeed, it is quite disappointing to remove such masses from the posterior wall and then find no improvement, because a small amount of thickening inferiorly is the cause of the hoarseness.

Infiltration of varying degrees was present in forty-seven cases. In the vast majority this consisted of a small amount of thickening of the area. In three there were found quite large masses projecting forward between and above the vocal cords.

In two specimens was found a rather unique and entirely unexpected condition of affairs. Both presented the same surface appearance and in both was found precisely the same condition when the larynx was cut into for specimens. The space was somewhat elevated and when a knife was passed vertically between the arytenoids and down to the cricoid, both above and anteriorly, it was seen that the posterior commissure was the seat of a small, spherical submucous abscess of about the size of a sturgeon's egg as is found in caviare. While this form and location of lesion may have been described, the writer has no recollection of having met with it in the literature.

Superficial ulceration was found four times. It probably was present more frequently, but this area was found to be the most difficult of all in which to diagnose lesions in the preserved specimen. As stated in the beginning, this study is one of gross conditions only, of conditions such as would meet the eye of the clinician and the figures presented must be accepted from that standpoint only.

134 South Twentieth Street.

LUPUS OF THE LARYNX.

DR. G. W. STIMSON, Pittsburgh, Pa.

Lupus and tuberculosis are pathologically identical (i. e., the former is a form of tuberculosis). All agree, for instance, that lupus of the nose is a tuberculosis of slow progress, and often primary. For this reason the argument has been advanced by some that the term "lupus" should be dropped from our nomenclature. Be that as it may, it presents, especially in the larynx, characteristics so different clinically from the common form of tuberculosis, which is practically always secondary to a pulmonary lesion, that for practical purposes it would seem expedient to retain some means, at least, of differentiating and classifying this extremely rare condition.

Lupus usually occurs between the ages of fifteen and thirty. It is more frequently met with in hospital patients, the anaemic and poorly-nourished than in private practice among the well-to-do. Some claim that lupus of the face is always secondary to lupus of the nose, while others claim exactly the opposite. And statistics have been advanced which would seem to substantiate both claims. The difference of opinion, however, may be but an apparent one, as it seems quite within the range of probability that it may some day be proven that the disease has its inception at the point where the skin of the vestibule joins the mucous membrane of the nose. Also it is claimed by some that lupus of the pharynx and larynx is always secondary to a primary lesion of the nose. This requires confirmation. Patients with lupus are very apt to become phthisical, but patients with phthisis do not tend to develop lupus.

The following is the report of a case that came under the writer's observation on his service at the Tuberculosis League Hospital of Pittsburgh.

F. H., thirty-eight years of age, male, white, mill-worker and patternmaker. Native of Austria; came to America about ten years ago. Married eleven years; wife well. Has five children living and well. One died at eighteen months from "intestinal trouble." Wife never miscarried.

Family history is negative except for fact that his father died twelve years ago at the age of fifty-eight of "Bright's disease" and "tuberculosis of the throat." Patient says his "father had pneumonia nine times."

Personal history: He had measles and diphtheria before twelve years of age, no sequelae; and malaria between ages of six and twelve. Denies gonorrhea and lues. Had swollen cervical glands eighteen or twenty years ago, that disappeared in five or six weeks. Had two abscesses under left arm fourteen or fifteen years ago that were opened and drained.

History leading up to present illness: About twelve or fourteen years ago he contracted a severe cough, which persisted, with loss of weight and occasional night sweats. He began to spit blood, and had hemoptysis frequently thereafter. He says he developed lupus of the hands "seven years ago," and of the right side of the neck "four years ago." Lupus of the mouth made its appearance six or eight months ago. He made no voluntary complaint of his nose other than that he has always been troubled with catarrh and rather frequent epistaxis. Hemoptysis returned in 1908 when he first visited the medical dispensary of the Tuberculosis League, where the diagnosis of lupus of the skin and advanced tuberculosis of both lungs was made by Dr. W. C. White and his assistants.

His throat first began to give him trouble about December, 1913 (over a year ago). First there was an itching and burning sensation. This would come and go, get better, then worse, until finally, with all other subjective symptoms referable to his throat, it disappeared entirely about June, 1915. He entered the hospital as a house patient on February 28, 1915. Previous to this he had moderate cough which has been much less since then. There was no spontaneous pain beyond the burning and itching. There was practically no dysphagia. About the beginning of March, 1915, he also developed some hoarseness and slight pain on using his voice, and he was referred to the writer for examination.

First examination, March 30, 1915. *Skin:* Typical lupus of both hands and right side of neck.

Nose: On the left side of the septal cartilage just inside the vestibule was a small, very superficial ulceration dotted with minute, discreet, apple-jelly-like nodules, with ill-defined margins and not over 1 cm. in diameter. About its circumference it looked as though there had been some cicatrization. It was so inconspicuous, that unless especially sought for, it might very readily have passed unnoticed.

Mouth: On the buccal mucous membrane just inside the left angle of the mouth was a cluster of similar minute nodules forming a superficial area of infiltration about the size of the ring-finger-

nail. There was little or no reaction, nor was there any active ulceration.

Larynx: About one-third of the epiglottis had been entirely eaten away, a little more to the right than to the left, leaving a wide V-shaped gap, apex toward the base of the tongue. Its ulcerating edges were irregular, ragged, mamillated, and streaked with scanty, sticky secretion. While the ulceration was active there was an entire absence of local reaction. It lacked that "angry" look (if one be permitted the expression) that one would expect to find with such an extensive and destructive ulceration under ordinary circumstances. It looked sluggish and indolent. The epiglottis was two to three times its normal thickness, and its motion was restricted to about half its usual excursion. Had there been no destruction, but a very limited view of the glottis would have been obtainable, but as it was, through the V-shaped gap in the epiglottis a fair view could be had.

There was no involvement of any of the cartilages (with the exception of the epiglottis) and motion of the arytenoids was free and unrestricted. The right cord and ventricular band were normal. On the left side there was infiltration of the cord and band, which could not be clearly differentiated from each other, with a marginal ulceration streaked with scanty secretion.

On account of the presence of lupus on other parts of the body, absence of local reaction, indolence, and sluggish appearance, extensive and destructive ulceration with almost total absence of subjective symptoms such as pain, dysphagia, etc., and non-involvement of all cartilages except the epiglottis, the diagnosis of lupus of the larynx was made.

Last examination September 1, 1915. During the interval (five months) the patient has been in the hospital under the care of Dr. White and his assistants. There has been no local treatment.

Subjective symptoms: There is no pain, no itching or burning, no hoarseness, no dysphagia; in fact, there are no subjective symptoms at all, and the patient voluntarily states that he "hasn't been conscious that he's had a throat for about the past two months."

Objective symptoms: V-shaped area of destruction of approximately same size as March 30. The edges are cleaner and more sharply defined. The ulcerative process has not advanced, but seems to have rested, and there appears to be an attempt at healing. There is no secretion. The thickness of the epiglottis has lessened so that it is only about half again greater than normal. The infiltration of the left cord and ventricular band has disap-

peared, and the former, pinkish in color, can be clearly differentiated from the red, normal-looking false cord. The marginal ulceration and secretion have vanished. His weight on admission to the hospital on February 28, 1915, was 120 pounds. This rose steadily to 132 pounds on May 1. Since then it has varied a few pounds and on September 1 was 130.

The characteristic improvement with tendency toward healing strengthened the diagnosis. Not wishing, however, to report this case as one of lupus without another opinion, the writer referred the patient to Dr. Chevalier Jackson, who in his report replied: " * * * I find the condition of Mr. H.'s larynx exactly as you stated and I agree with you in the diagnosis of lupus."

Whether in this case, which was seen so long after the inception of the disease, the lupus preceded the tuberculosis of the lungs or vice versa, it is impossible to say. Also it is impossible to state definitely which of the lesions was primary, lupus of the skin or lupus of the mucous membranes; and of the lesions of the nose, pharynx and larynx just what the order of sequence has been. But it appears to the writer that the lesions of the skin preceded those of the mucous membranes, and of the latter that the lupus of the larynx was probably the primary one.

Jenkins Arcade Building.

Infection of the Middle-ear with Vincent's Organism. J. ADAM,
Brit. Jour. Child. Dis., Feb., 1915.

In the four cases reported there was no fever present, and little disturbance of the general health. The disease is chronic, marked by the presence of a foul-smelling discharge showing the constant presence of Vincent's organism. In 75 per cent of the cases the pneumococcus is associated. In the more pronounced cases there are also profuse and easily-bleeding granulations, erosion of the external parts of the ear and slight glandular enlargement. In the reported cases, however, the disease yielded readily to appropriate treatment, which consisted of the use of solutions of ethyl violet and brilliant green. The condition may often be confounded with diphtheria.

THE UPPER RESPIRATORY PASSAGES IN HABITUAL USERS OF COCAIN AND HEROIN.*

DR. ROBERT F. RIDPATH, Philadelphia.

Immediately following the enforcement of the Harrison law great numbers of drug fiends were "rounded up" and sent to the City Hospital of Philadelphia. It occurred to me that it would be of decided interest to make a systematic study of the noses and throats of these individuals. After having received the necessary permission these investigations were commenced only a few days after the enforcement of the new law.

Class of Individuals—As in all walks of life, various characters were met with in the drug fiends. Several that were examined had degenerated from a decidedly higher stratum to their present position. Others had lived in the tenderloin from birth. If there is any equalizer of humanity dope in its various forms seems to be that article. The types of those examined were as diverse as it would be possible to conceive, ranging from high intellectually to the semi-imbecilic.

Character—The moral side of the nature of those examined seemed to have been entirely destroyed. To obtain sufficient money with which to buy the drug they would commit a crime without any feeling of remorse. Cigarettes in great quantity were smoked by both the male and females but liquors were used by but few and in small quantity.

The histories given by all showed great similarity. For example: K. C. Female. Age 18. A user of heroin and cocaine. Examined March 16, 1915. Two years ago she started to use heroin out of curiosity, snuffing it up to the nose. The first time it produced a feeling of buoyancy lasting one-half hour. This was followed by drowsiness and sleep accompanied by pleasant dreams. She made no attempt to stop the habit and now uses seventy one-sixth grain heroin pills a day, snuffing five or six into the nostrils at one time. Two months ago the patient was compelled to stop work on account of inability to concentrate her mind. She could sleep at any time. The effect of the heroin lasted ten or fifteen minutes. Eighteen months ago she started to use cocaine. When the cocaine wears off the nose "burns" and feels clogged up. While under the influence of the cocaine the patient would talk excessively, steal and lie but

*Read before the Philadelphia Laryngological Society, October 5, 1915.

would not remember just what she did. She has a thin, watery discharge from both sides of the nose and uses five handkerchiefs a day.

Another example. A. J. Female. Age 23. Smokes opium, uses heroin and cocaine. Examined March 16, 1915. Four years ago she began to use heroin to cure her of the opium habit; then she found she had both. She used from one hundred to one hundred and fifty one-sixth grain heroin pills a day and six or ten of the pills at one time. Three years ago she began to use cocaine and now uses a mixture of heroin and cocaine. The patient has a thin, acrid nasal discharge and uses five handkerchiefs a day.

The other cases are essentially similar. One of the statements constantly made by members of the group was that the use of heroin is a habit and that heroin is a habit-forming drug, but cocaine is *not*. How such an erroneous impression could be made upon these unfortunates I do not know unless the dealers used the phrase for their individual benefit or it may have resulted from the diversity of the symptoms produced, the cocaine causing hilarity with free speech, heroin producing the reverse—drowsiness, sleep and loss of real or imaginative trouble.

The *general condition* of those examined was in ratio to the amount of drug used and the length of time the patient had been addicted to the habit. The majority were thin, emaciated and anemic except a few of the better class patients who, perhaps as a result of better nourishment and environment, did not show this characteristic.

The method of using the drugs was practically the same with all the patients. They would crush the heroin tablets or the cocaine crystals, placing the powder in a small paper funnel; then by inserting the small end and tilting or elevating the other end, the drug would by gravity enter the nostrils. The former method of snuffing the powder from the palm had been discontinued on account of the increased price of the drugs and the loss which this method entailed.

The *method of examination* was the usual technique employed in any nose or throat examination but as the patients were confined to bed during the first week of treatment our examinations were necessarily made with the patients in the recumbent position. With an electric headlight the nasal cavities were examined as to the amount of room, the condition of the turbinates, the visibility or the non-visibility of the vault, the condition of the septum and of the inferior and middle passages, olfactory fissure, etc. The mucous

membrane was tested for sensibility. Atrophy or hypertrophy, crusts and secretions were noted as well as their amount and location. The condition of the buccal mucosa, teeth, tongue, hard palate, fauces, tonsils, pharynx and lingual tonsil was noted.

The results may be stated as follows: *Nose*. Roomy right twelve, left twelve; normal, right seven, left seven; narrow, right two, left two. *Turbinates*. Hypertrophied (red and swollen), right three, left four; atrophied, right thirteen, left thirteen; normal, right three, left three; irregularly contracted, right one, left one.

Vault. Visible, right twelve, left ten; invisible, right seven, left eleven.

Inferior nasal passage. Roomy, right nine, left seven; occluded, right one, left two, narrow, right eleven, left four.

Middle nasal passage. Roomy, right nine, left seven; occluded, right two, left two; narrow, right ten, left twelve.

Olfactory fissure. Visible, right five, left four; invisible, right sixteen, left seventeen.

Mucous membrane. Normal one; irritated, congested, red and swollen, engorged, thickened, eight; atrophied, anemic twelve; normal sensation, eleven; loss of sensation, four; hypersensitive, six.

Septum. Straight, seven, deviated, ten, perforated, four.

Chronic watery discharge. Thin and acrid, eleven; thick, three; crusts, five; epistaxis, four.

Anosmia, two.

Complete occlusion of nares, one.

Irritable cough, seven.

Infantile larynx, one.

Anemic larynx, five.

Inflamed cords, one.

No uvula, one.

Double uvula, one.

Teeth. Good, ten; poor, seven; fair, three; false, one.

Tongue. Coated, sixteen; clean, five.

Hard palate. Normal, ten; anemic, eleven.

Fauces. Normal, four; anemic and atrophied, thirteen; subacutely inflamed, three; acutely inflamed, one.

Tonsils. Normal, nine; anemic, four; hypertrophied, three; atrophic, three; diseased, two.

Pharynx. Granular, glazed, anemic, atrophied, vessels engorged and prominent through thinning of the mucous membrane, sixteen; ac. or beginning, four; normal, one.

CONCLUSIONS.

1. The constant use of heroin or cocaine upon a mucous membrane produces firstly, a greatly swollen and congested membrane and secondly, this is followed by an atrophy and anemia of all membrane involved.
2. Chronic users of these drugs do not have the same amount of "catarrhal" affections as people not addicted to its use.
3. The sensibility of the mucous membrane is not affected.
4. Perforations of the septum are not directly due to the drugs used but when present may be accounted for by a history of constant pricking, abrasion of the mucous membrane by the finger nail with consequent perforation.
5. Cocaine and heroin used in this manner do not produce anosmia.
6. The drugs are absorbed by the mucous membrane of the larynx as much as, if not more than, by the mucous membrane of the nose. This is shown by the constant atrophy of the mucous membrane and the engorgement of the vessels of this part.
7. Heroin produces a thin, acrid discharge. Cocaine causes epistaxis.

2032 Chestnut Street.

Tuberculosis of the Nasal Fossae. C. I. GRAHAM, Proc. Roy. Soc. Med., Laryngological Section, Vol. 8, No. 5, March, 1915.

A female, 16 years of age, who had never had any nasal symptoms or any other illness, noticed slight nasal obstruction. There was slight enlargement of the anterior end of the right inferior turbinate, which was red and granular in appearance, with a slight amount of a clear, sticky discharge. The same appearance, but to a lesser degree, was presented by the left inferior turbinate. A small piece from the right bone was removed for examination. She was again seen about two months later, when definite ulceration of the right vestibule involving the outer wall, ventricle and a small area of the adjacent septum was present. The condition of the left inferior turbinate remained unchanged.

THE EVOLUTION OF THE SPECIALIST IN OTO-LARYNGOLOGY.*

DR. D. J. GIBB WISHART, Toronto, Canada.

The subject which I have chosen as the main topic of this year's Presidential Address is "The Evolution of the Specialist in Oto-Laryngology," yet what I have to say will apply equally, perhaps, to any of the so-called specialties. The subject conveniently arranges itself under four heads: (a) The definition of a specialist; (b) the need for his existence; (c) the training required; (d) the nature of his relationship to the general practitioner.

In developing this subject, I shall require to use some plain speech, because between the degrading, but alluring effect of the establishment of certain polyclinics or post-graduate schools, where, to quote the Carnegie Report, "the training is of a practical, not of a fundamental, or intensive kind," calculated to "teach the trick," or, perhaps better, to exhibit an instructor in the art of doing it, and on the other hand, the desire of the wearied practitioner to get into something "easy," this country is threatened with becoming burdened by a load of ill-trained specialists.

Believing that, in the words of Oliver Wendell Holmes, "fear of open discussion implies feebleness of inward conviction, and great sensitiveness to the expression of individual opinion is a mark of weakness," and disclaiming all intention to offend, I invite your attention and forbearance.

A specialist has been defined as "one who knows as much about all parts of his subject as any, and more about one part of it than any other," but I would paraphrase this definition and bring out its meaning more fully. A specialist is one who, *after* completing the usual time of medical study and obtaining his degree, pursues a further course of instruction over a number of years, in some limited field, and abandoning the practice of every other branch of medicine, confines himself solely to that branch in which he has thus become qualified to speak with authority. No one has a right to pose as a specialist who has not proved his title to do so by such a prolonged course of special study, and let me remind you that the cards which some of our numbers permit to appear in the advertising columns of

*Part of the Presidential Address to the Ontario Medical Association,
May, 1915.

the newspapers, reading somewhat as follows: "Dr. ——, Phys. & Surgeon, Graduate of the —— University,—Licentiate of the College of Physicians and Surgeons of Ontario (as if he could practice at all without this). Special attention given to Diseases of the Eye, Ear, Nose and Throat," are strictly unethical, according to the code of this Association, and, in my personal opinion, beneath contempt.

The backbone of our profession is the general practitioner. As Osler writes, "There never was a time in our history in which he was so prosperous, so much in evidence, in which his prospects were so good, or his power in the community so potent. He still does the work, that great mass of routine practice which brings the doctor into every household in the land, and makes him, not alone the adviser, but the valued friend. He is the standard by which we are all measured. What he is, we are; and the estimate of the profession in the eyes of the public is their estimate of him. A well-trained, sensible doctor is one of the most valuable assets in a community, worth to-day, as in Homer's time, many another man. To make him efficient is our highest ambition as teachers, to save him from evil should be our constant care as a guild."

But medicine advances by leaps and bounds, and it is absolutely impossible for one brain to compass the length and breadth of medical knowledge. Nor is it reasonable that the man just graduated should be expected to be equipped with a full knowledge of medicine, embracing all the newest procedures, and ultimate tests, in every specialty. If this were demanded, the curriculum of the medical course would be stretched out by many years, and the task of entering upon the practice of the healing art, already difficult enough, would be made impossible for the average man or woman. In addition, the pecuniary results to be obtained afterwards would not be worth the investment of time and money. Our license to practice does not even yet demand that the graduate be able to recognize a membrana tympani. The hearing of a few lectures will not teach him this. In the Universities of McGill and Toronto, it is only very recently that the course has been made clinical, instead of didactic.

The public is both ignorant and superstitious; they have been accustomed to think that the letters M.B., or M.D.C.M., mean that the owner of these mystical characters is possessed of a complete knowledge of all things medical. On the other hand, you know and I know, that we are vastly ignorant, and that medicine is far

from an exact science, and therefore we should strongly combat this wrong opinion on the part of the general public.

Reason there is, and the very best, that men should specialize, should fit themselves to know all there is to know upon some one of the various branches of the healing art.

The specialist exists to give assistance to his brethren, the general practitioners, not to enter into competition with them in any shape or form.

But if the specialist exists for the assistance of the general practitioner, I would have the latter fixed in his determination to demand high qualifications of those whom he calls upon for such assistance. What should those qualifications be?

1st. An excellent general preliminary education, including a knowledge of the more important modern languages, an indispensable accomplishment for one who must follow the international literature of the day.

2nd. A post-graduate position as hospital interne, preferably in medicine, but better still in both medicine and surgery.

3rd. A year or more in general practice, during which he may try himself out, and when he chooses his specialty, choose wisely.

4th. If the choice be oto-laryngology, then must there follow an internship of at least eighteen months, devoted exclusively to the special subjects, where he will toil daily with patients in a special clinic, mastering the details of examination and diagnosis, and be trained under a master eye in the technique of operations.

5th. Lastly, he must place a coping stone of a further year at some university where he will obtain post-graduate instruction upon, (1) clinical diagnosis and treatment; (2) functional tests especially; (3) bedside work on surgical cases; (4) surgical practice on the cadaver; (5) practical treatment and minor operations in the out-patients' ward; (6) demonstrations and lectures on normal and pathological anatomy, histology and physiology; (7) diagnosis and pathology of labyrinth diseases.

When finally he seeks the suffrage of his fellows of the general profession, he must become attached to a hospital where he can maintain his contact with a public clinic, for otherwise he can never hope to advance, or even to keep abreast of his subject.

I have given you above the qualifications demanded by the American Laryngological, Rhinological and Otological Society, and also of the hospital where I have the honor to control the Oto-Laryngological service.

Am I too ambitious in making these demands? No, if we, as specialists, are to deserve the respect of our confreres, we can demand no less.

Unfortunately, although specialism, with its implicit claim of superior skill in one direction, is now recognized as both efficient and useful, it remains on a very informal basis, and few universities are yet equipped to give adequate preparation for specializing, but a better day is dawning, and this function will be recognized by the universities, and, indeed, specialization will not be allowed without such university post-graduate training.

As the Carnegie Report says, "Improved medical education will undoubtedly cut the ground from under the independent post-graduate school as we know it. This is not to say that the undergraduate medical curriculum will exhaust the field; on the contrary, the under-graduate school curriculum will do only the elementary work; but that it will do, not needing subsequent and more elementary instruction to patch it up. Graduate instruction will be advanced and intensive, the natural prolongation of the elective courses now coming into vogue. For productive investigation and intensive instruction, the medical school will use its own teaching hospital and laboratories; for the elaboration of really thorough training in specialties resting on a solid undergraduate education, it may use the great municipal hospitals of the larger cities. But advanced instruction along these lines will not thrive in isolation. It will be but the upper story of a university department of medicine. The post-graduate schools of the better type can hasten this evolution by incorporating themselves in accessible universities, taking up university ideals, and submitting to reorganization on university lines."

The truth is, we have too many so-called specialists, the damaged fruit of commercial post-graduate colleges, managed by a board of stockholders for the sake of the almighty dollar. The unfinished product of these institutions has resulted in the establishment of a class of mediocre specialists, who often bring discredit upon the whole institution of specialism. To quote from a recent writer in the *New York Medical Journal*, "The true specialist can never afford to stop working scientifically. The continued wave of progress in medicine must be closely followed by him, lest he remain behind. In his practice the true specialist should be, before all, a reliable diagnostician. Acquaintance with the commoner diseases of any organ may safely be expected of any well-trained and fairly experi-

enced general physician. But we have a right to demand from the specialist thorough and easy familiarity with rare and exotic affections also; in other words, in his role of consultant, he should be an expert. Likewise, he should be fully at home in all therapeutic methods pertaining to his specialty. Whereas to the mediocre specialist his specialty is nothing more than a milch cow. Such a man probably enters the medical college with a firm determination of eventually 'making a specialty' of a certain class of diseases. While in college he considers everything which is not directly related to his prospective fields as irrelevant, gets through his medical course easily, about well enough to barely pass his examinations without being plucked. His sheepskin still damp from the signatures of the faculty members, he at once goes abroad for special studies, to Paris, London, Vienna. These studies are largely devoted to a minute investigation of the most famous cafes, restaurants, theaters, and other places of amusement; a few special courses by privatdoctents or assistants, given in a poorly understood foreign language, are however, usually taken along by the way, as it were. Six or twelve months later he arrives home, where his friends have already been prepared by numerous letters of his wonderful attainments abroad, armed with instruments of the latest pattern, declaiming about the very most recent methods of treatment of which he is now the only possessor, and superciliously sneering at old-fogeyish Dr. X, whose competitor he starts out to become."

The nature of the relationship of the specialist to the general practitioner must be considered from opposite sides. The specialist must remember that he is dependent for his practice upon the general practitioner, and that his advice is sought for the purpose of a skilled diagnosis in determining the line of treatment, which often may be carried out fully by the family doctor. He is to be the ally, not the competitor, ever ready to support, and never willing to supplant. It is up to him, in association with the pathologist, the physiologist and the clinician, to do the bulk of the real work in the science and art of medicine.

On his side the general practitioner should make free use of the specialist. Is he to refer all cases in oto-laryngology to the specialist? No. But it is wrong for him to fail to do so, when he cannot fairly claim that he possesses the requisite knowledge of the conditions before him, which will enable him to serve the best interests of his patient. His conscience should tell him whether he has

arrived at the point where his patient should have the benefit of a knowledge beyond his own. If this point is reached, failure to employ this extra knowledge is nothing short of criminal. If he is absolutely steadfast in calling to his aid every possible means of securing the best interests of his patient, he will surely and steadily build up for himself a reputation for reliability and carefulness, which will establish his high standing in the community, and give him the priceless possession of a conscience void of offense toward all men.

To do the opposite is to descend to the commercial basis of the public the results of which are seen in the deplorable editorial attitude of many of our leading newspapers towards all things medical, in the scepticism of the legislature to the altruistic intentions of the profession as a body, and in the too widespread opinion among the general public, that the physician is not sincere in the promotion of measures which might prejudicially affect his pocket, because it would not be "business."

As Osler puts it, "Faith is the great lever of life; without it man can do nothing; with it, even with a fragment, as a grain of mustard seed, all things are possible to him. Faith in us, faith in our drugs and methods, is the great stock-in-trade of the profession. To wrest from Nature the secrets which have perplexed philosophers in all ages, to track to their sources the causes of disease, to correlate the vast stores of knowledge, that they may be quickly available for the prevention and cure of disease, these are our ambitions."

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47 Grosvenor Street.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY

Meeting of October 27, 1915.

DR HUBERT ARROWSMITH, Chairman.

Case for Diagnosis: Cyst or Accessory Thyroid. DR. ABRAHAMS, New York City.

This patient is an Italian, thirty-five years of age, male, has been in this country six years and is a cook by occupation. He says that about ten months ago he noticed that he began to suffer from nausea and vomiting and had difficulty in breathing. At times his throat would become dry. He also noticed that if he would lower his head he could breathe very much better, but got a tickling sensation in his throat. The patient presented himself at my last clinic and I only had a few minutes to examine him.

I found a peculiarly shaped tumor mass attached to the glottidean fold and base of the tonsil. With the laryngeal mirror, looking into his throat you can see a large globular shaped mass extending to the pyriform fossa of the left side and covering the epiglottis. With a tongue depressor, by retching, this tumor is brought into view. The mass seems to be about the size of a pigeon egg. I have made the diagnosis of cyst or accessory thyroid. He has come to the hospital for operative treatment. I brought him here on account of the peculiar location of the tumor.

DISCUSSION.

DR. HARMON SMITH: I should conclude this tumor to be a cyst of the ary-epiglottic fold. I had occasion to present to this section a case similar to this of a cyst of the ary-epiglottic fold. Unless later verification bears out the statement that it is connected with the tonsil, I should be disinclined to believe that it has any connection whatever with the tonsil, unless possibly an adhesion by continuity. My experience is that they are confined absolutely to the ary-epiglottic fold.

Stenosis of the Larynx Due to Traumatism. DR. WILLIAM WESLEY CARTER, New York City.

This woman, 26 years of age, was in a carriage on June 12, 1915, when it was struck by a run-away horse. She received several cuts about the face and arms from the flying glass and the shaft of the wagon penetrated her neck producing a large lacerated wound. The woman was removed at once in an ambulance to Gouverneur Hospital and admitted to the general surgical ward apparently in a moribund condition. Dr. Silver, who happened to be in the hospital at the time, had the case taken immediately to the operating room. He found the patient unconscious, pulseless at the wrist and almost exsanguinated. She had inspired a considerable amount of blood through a large jagged wound in the larynx and trachea. The hemorrhage was chiefly from the injured superior thyroid artery. After the vessels had been tied, a tracheotomy canula was inserted through the opening in the trachea and the wound

sutured. After vigorous stimulation and several saline injections the patient rallied. The wound was infected and the patient developed broncho-pneumonia. The suppuration in the neck wound was very extensive and involved the deeper structures of the neck, counter openings had to be made for drainage. Portions of both the laryngeal cartilage and the trachea sloughed away. At this juncture, about two weeks after the injury, the patient was transferred to my service and came under my observation for the first time. The patient's general condition was one of extreme exhaustion. In the neck there was a large, deep suppurating wound in which important structures of the neck were dissected out by the pus. The tracheal canula had been inserted at the cricothyroid junction and was in its position and surrounded by pus and granulation tissue. In about three weeks, under treatment, the wound had healed about the tracheal canula, I then removed this canula and intubated. The patient was comfortable for a few hours, but that night the tube, which was entirely too short, reaching scarcely below the tracheal wound, became clogged and had to be removed and the tracheal canula re-inserted. This has remained in the trachea up to the present time. I have on several occasions tried to establish breathing through the larynx, but without avail as the latter seems to be almost completely stenosed. On removing the tube and stopping up the opening into the trachea no air passes through the larynx. The laryngoscope shows the ventricular folds lying in close apposition, there is no apparent movement of the cords on attempted phonation—everything seems relaxed or paralyzed.

On October 11, with the assistance of Dr. Lynah, I succeeded in introducing by means of his new speculum and direct introducer, a long laryngo-tracheal tube which reached down below the wound in the trachea. At first the patient could breathe through this, but on changing the position of her head the tube slipped into the larynx and was occluded by the ventricular folds, so it had to be removed. I have made for this case a long tube with a very large head, and I think that this will meet the conditions presented. It is my intention to introduce this and allow the wound in the neck to heal. The difficult question will then arise as to how to dispense with the tube. It is my intention to dilate the larynx and trachea at frequent intervals. This will require the use of graduated long tubes, for the stricture involves not only the larynx but also the upper part of the trachea, and as there is an absence of cartilage over part of this area as shown by the X-ray plates, there will be some difficulty in preserving the lumen of the tube.

After the neck wound has healed and the general condition of the patient is improved it is my intention to try to reinforce the laryngeal and tracheal wall where the cartilage is deficient, by transplanting a sheet of cartilage obtained from the costal cartilages of the 8th, 9th and 10th ribs at the point where they coalesce. I shall be glad to report the result of this procedure at some future meeting of the Section.

The question as to the recovery of the speaking voice after such an extensive injury is, of course, problematical, but it is astonishing what severe injuries the larynx may sustain, and yet in a few weeks or months the voice is recovered.

I present this case as one of the most extensive traumatic injuries to the larynx and trachea that I have ever seen.

DISCUSSION.

DR. QUINLAN: I would like to emphasize the importance of early tracheotomy in injuries to the trachea and larynx. The great tension exercised upon these parts can be overcome by putting them at rest. Septic pneumonia is likewise anticipated, a condition that follows in a large percentage of such injuries. Setting these patients up in bed likewise helps to overcome the lung infections. In St. Vincent's Hospital we always do a tracheotomy in cases of attempted suicide by cutting the throat. The tracheotomy rests the respiratory activity and allows better apposition for the wounded areas.

DR. WILLIAM W. CARTER: In regard to using a small tube, I used a tube that was too small and it dropped down into the larynx and I had to take it out. The patient could breathe only a short time with it. That is the reason why I had that tube made with the extra large head. I have not yet tried it, but think that probably it will be too large at first and that the stricture will have to be dilated before the larynx and trachea will receive the tube. It will be remarkable if this woman recovers her speaking voice as her larynx seems to have been torn to pieces. In regard to doing a tracheotomy at this time of the injury, I will say that the trachea was so thrown open that it was not necessary to make any other opening. It was practically torn open from the larynx down to the sternum. I did not see the case until two weeks after the injury. The two lantern slides which I have here show the loss of the cartilage in this case.

DR. HARMON SMITH: I presented a case before this section in 1914, in which the larynx had been transversely severed with suicidal attempt and one vocal cord detached from its attachment to the thyroid cartilage. A plastic operation was performed and the cord sewed in place and in due course of time the functions of the recurrent laryngeal nerve were re-established. The patient under ordinary circumstances could speak quite well and loudly, but when presented to this section he underwent stage fright and did not give evidence of his proper vocal abilities. I saw the man two weeks ago and the operation was performed over two years ago. The cord now moves perfectly upon the injured side upon which the recurrent laryngeal nerve was severed. The thyroid fistula is permanently closed. The man is now optimistic and obtains permanent employment. I do not know if Dr. Carter's case can be so treated, but it is well worth the effort, particularly as Dr. Carter is skilled in plastic work. At present I should judge that the tube he presents is too large for the lumen of the trachea and I think it will be necessary to graduate the tubes from a smaller up to a larger one.

A Case of Tubercular Leprosy Involving the Upper Air Passages. Dr.

H. ARROWSMITH, BROOKLYN, N. Y.

To be published in a subsequent issue of THE LARYNGOSCOPE.

DISCUSSION.

DR. LEE M. HURD: The girl presented has no symptoms at all referable to the nose and throat it seems, except that she is somewhat dyspnoeic.

DR. WILLIAM W. CARTER: Two years ago I saw several cases of leprosy on the island of New Providence. Some of these had nasal obstruction exactly like the one shown tonight. This is unquestionably a case of tubercular leprosy, the facial appearance is almost an exact duplicate of the ones I saw.

Several years ago, I reported some other cases before this body.

Black Hair Tongue. DR. HUBERT ARROWSMITH, Brooklyn, N. Y.

Doctor B— has come to me several times in the last few years with a rhino-pharyngitis following what seemed to be an attack of grippe. On each occasion, being run down and debilitated, he has presented the curious and rather rare condition of black hairy tongue. It gives rise to no symptoms and disappears, as he recuperates, without treatment. The appearance is rather unusually extensive, though the pigmentation is now not as dark as it has been.

DISCUSSION.

DR. WILLIAM W. CARTER: Two years ago I presented two cases of black hairy tongue. One of the cases had cleared up before the meeting that night and I showed the patient well and the other one cleared up in about three weeks after he was shown at the Academy. The cases were very interesting and the first and only ones I had ever seen. In both of these cases the patients were very much addicted to the use of tobacco and I attributed the condition to this habit. There was nothing special about the cases and no symptoms. The only thing was this black hairy spot on the tongue which was very well marked at the time. I have not seen either of the patients since they recovered, so I do not know if the condition has ever recurred.

Papilloma of the Nose. DR. JAMES G. CALLISON, New York City.

To be published in a subsequent issue of THE LARYNGOSCOPE.

DISCUSSION.

DR. QUINLAN: Did you ever use radium in these cases? I have noticed a great many of the papillomatous conditions of the larynx absolutely disappear under the influence of radium. I have seen several cases where these growths faded away. In one instance a recurrence took place; it is this picture that the doctor has drawn and sooner or later it may penetrate the cranial cavity. Now, radium works marvels in a great many cases. I noticed a case a few months ago, before I went on my holidays, in a woman with malignant disease of the antrum. The entire face was distorted by its invasion. Soon after radium was applied. I was surprised when I saw the patient a few weeks ago to note the great improvement that had taken place. If a tube of radium could be suspended in the larynx for papillomatous growths, I am sure it would clear up many of the warty masses. Of course, care and caution must be observed in its use, as violent irritation by burning has been seen in many instances. However, the agent seems and is a great boon to these inoperable conditions, and the patient should have the benefit of any therapeutic measures at our command.

DR. ARROWSMITH: I have had two cases of true papilloma of the nose, which I excised, and cauterized the base. Neither growth recurred.

I think Doctor Callison would be aided in extirpating this tumor by doing a lateral rhinotomy after the method of Moure. This procedure gives very free access to the ethmoidal region, and simplifies the opening of the antrum and frontal sinus.

I hope Doctor Callison will try this method.

DR. HARMON SMITH: Some years ago Dr. Jonathan Wright and I had a case of a similar nature to this in a woman, forty years of age, where the growths sprang from the upper third of the septum and turbinate region opposite. The attic was completely filled. Every few weeks we could remove at least a spoonful of papilloma from this area, which would immediately recur. Considerable hemorrhage attended the operative procedure. This procedure continued for two years without any evidence of diminution of the growth. The patient then removed to Boston and was put under Dr. Mosher's care. He ultimately exenterated the whole ethmoidal tract and likewise removed the mucous membrane from the septum opposite this tract. This, however, did not overcome the condition and he concluded from what he found at the operation that they must have continued on through the frontal sinus and possibly up into the brain. Definite track of the case was lost, but it was finally ascertained that she died of symptoms of a malignant growth.

DR. J. G. CALLISON: In regard to the prognosis, whether these cases are going to recur or are going to change to a malignant growth, the microscope is of the highest importance. In such cases as you have here, springing from columnar epithelium, where there is a tremendous increase in the number of layers, you can count on that growth continuing as a benign growth.

On the other hand, where the epithelium remains normal or there is a reduction in the number of layers, that growth is or will be a malignant growth. That represents the two types and I think in this case the change is of the former variety. My micro-photographs show the tremendous thickening of the epithelium in this particular case and that renders the prognosis very good.

A Case of Chronic Stenosis of the Larynx. DR. H. L. LYNAH, New York City.

DISCUSSION.

DR. W. FREUDENTHAL: Dr. Lynah was good enough to let me see this case several months ago. There was a chronic stenosis then present and it impressed me as though it might be of a tuberculous nature. I still leave such a possibility open. Dr. Lynah has done good work in the meantime and the larynx is now open wide enough for breathing purposes. However, if he dilates it further and uses the galvano-cautery he will perhaps get quite normal conditions.

DR. JOSEPH H. ABRAHAM: In infection of the tonsils, pharynx and Larynx similar to the one presented by the Doctor, I prefer my Ichthyol solution and would be pleased if the Doctor would give same a trial.

The Dangers of Neglect in Injuries of the Nose from Football and other Sports. DR. D. BRYSON DELAVAN, New York City.

Fractures of the nose are especially apt to occur in football and perhaps in boxing, because the nose, from the prominence of its position, is

especially vulnerable. Blows of moderate force are not liable to do serious harm. Following injuries due to greater violence not only the external contour may be deformed but displacements of the interior framework may take place with permanent obstruction to nasal respiration.

The processes of repair after nasal fracture are very rapid, complete union often being accomplished within a fortnight. The grand opportunity for securing the best results is presented immediately after the accident, before edema has obscured the situation and adhesion of the displaced fragments has begun to take place.

DISCUSSION.

DR. WILLIAM W. CARTER: I think that Dr. Delavan has called our attention in a very timely hour to the results that follow traumatic injuries to the nose. A number of these cases have come under my observation and while it will not deal strictly with the paper, the suggestion of a means by which these deformities may be avoided or corrected is not inapropo. Some eight years ago I devised a method (the bridge-splint operation) for meeting conditions we find in football injuries to the nose, in the more severe injuries such as laceration of the septum, broken nasal bones and where the nasal bones are broken loose from their attachment to the frontal bone and the superior maxilla, and even when the latter has been crushed.

The old method of treatment was to introduce intra-nasal splints and stick on a piece of adhesive plaster across the nose, which usually flattened down the bridge and held it there, and as we get bony union in the nose in twenty days the deformity quickly becomes permanent.

When this is done, not only does the nose emerge in a deformed condition, but there is a nasal stenosis. Now if such injuries as this are taken in hand at once, and the bridge-splint applied, we practically re-construct the nose, preventing both deformity and stenosis. This bridge splint, to which I refer, applies the force in a direction diametrically opposed to that which produced the injury. It is founded on sound mechanical principles, the nose is pulled into its proper position. The splint is left on for two weeks and no deformity follows either externally or internally. Intra-nasal splints alone in severe and old cases of nasal deformity cannot accomplish this for as I have previously shown, the vertical diameter of the naris is only one-fourth of that of the nasal cavity, and intra-nasal splints or packing alone, are supported from the outside, face towards the floor of the nose and succeed only in making the nose broader and flatter. I have used the bridge-splint successfully in a large number of cases of both recent and old traumatic deformities.

DR. LEE M. HURD: Most boys are rather proud of getting their noses broken. The recent fracture is one of the easiest things we have to contend with. Within a few hours of the fracture we can remodel the nose to its normal condition and with very little work keep it there, without any external appliances. The most we have to use is a little iodoform gauze on the dorsum, just enough to hold it for two or three days and it will take care of itself. I have had within a year three such cases. One

fellow received an injury boxing at the athletic club. He went down to my office and I fixed up his nose and he had a perfect result. Along in the spring two Princeton students were driving a motor car. They stated that they went to sleep and ran off the road which resulted in having driven their faces through the glass shield and their noses were cut and fractured. One fellow drove a piece of the glass through his lip and nose and it stuck out at the outer corner of the eye. I fixed them both up at ten o'clock. The accident occurred at four o'clock in the morning.

If such cases delay for a day or so it is very hard to do anything with them after the swelling comes on. In after years, when these men get sufficient judgment, we have all sorts of trouble with them. Dr. Delavan is trying to bring this matter to the attention of presidents of the schools and colleges. The boys think it is a joke to have the nose smashed, but within six or seven years it looks very bad to them. One case under my observation had three operations before the deformity was finally corrected.

DR. D. BRYSON DELAVAN: I am anxious to impress the importance of this matter upon those who have the responsibility of these important and interesting cases.

Secondary Hemorrhage Following Posterior Tip Operations. Description of Sodium Citrate Transfusion. DR. HAROLD HAYS AND DR. RICHARD LEWISOHN, New York City.

To be published in a subsequent issue of THE LARYNGOSCOPE.

DISCUSSION.

DR. SAMUEL McCULLAGH: I would like to call attention to the use of pituitrin for the control of hemorrhage after operations on the nose and throat. My attention was called to it by an article in the Journal of the A. M. A. and I have employed it in five cases with excellent results. In the first case the hemorrhage followed a submucous resection, in the second an ethmoid exenteration, in the next two tonsillectomy. The last patient to whom I administered it claimed to be a hemophiliac and gave a history of a transfusion a year or so ago for the relief of exsanguination due to the hemorrhage from some trivial wound. In all these cases the relief was almost instantaneous, the hemorrhage ceasing in five or six minutes. It is administered hypodermically. The Parke-Davis Company put it up in glass ampules containing one c. c., which is the dose of their preparation. In addition to its vaso-constrictor action, I believe it also decreases the clotting time. Its use is followed by an almost immediate blanching of the skin, the patient becoming very pale. The only absolute contra-indication to its use is pregnancy and we are not likely to be operating under such circumstances.

DR. R. LEWISOHN: I have a two percent sodium-citrate solution in stock, dissolved in distilled water. The solution can be sterilized without losing its efficiency. If you want to inject 500 cc. of blood; add 50 cc. of the 2 per cent citrate solution, i.e., at the ratio of one to ten. You cannot use a more concentrated solution, as sodium citrate is only conditionally atoxic. The reason why sodium citrate has not been used before in transfusions is that everybody thought it was necessary to use

a one per cent solution to prevent coagulation. It is absolutely safe at the ratio of 0.2 per cent.

I will not take up your time by saying very much about the citrate method of blood transfusion, because it does not come into the field of laryngologist and rhinologist very often. On the other hand it is apt to happen that you suddenly may need a simple method of blood transfusion in a hemorrhage following a tonsillectomy or nasal operation.

We have used so far complicated methods (anastomosis, syringes) and these methods are very expensive. My method is so easy that it does not need any special apparatus nor any special technique to perform it properly. Its simplicity is evident. We know that citrate stops coagulation of the blood. We mix blood with citrate and this citrated blood will not clot outside the body in three days. We can even keep that blood for a few days without risk of coagulation. Transfusion can be performed in very few minutes. Interesting experiments show that after infusion of citrated blood the coagulation time of the recipient will be shortened for a few hours; after twenty-four hours everything will be normal.

The technique is simple. You puncture the vein of the donor and let the blood run into a glass jar, containing the citrate solution. You collect from five hundred to eight hundred cc. After the blood is collected you puncture the vein of the recipient or make a small incision. You introduce the needle into the vein of the recipient and attach to this needle a salvarsan flask, which contains the citrated blood from the donor. You do not even need to have the donor and the recipient in the same house. I have collected blood in the laboratory then taken it over to a private house for injection. I have done this with very good results. I think the method might interest you, it is most simple and can be very easily applied at short notice.

DR. C. J. IMPERATORI: Regarding transfusion, I wish to recommend the citrate method of Dr. Lewisohn. I have seen four cases that were transfused—all following severe hemorrhage in nose, throat, or ear work. Two were by the Lindeman method and two by the Lewisohn method. In comparison with other methods, the ease with which one can do a Lewisohn citrate transfusion makes it the method of preference. One of the cases following the citrate method had severe symptoms of shock, three hours after the transfusion. However, shock may supervene following the Crile, Carrel, or any method.

DR. R. LEWISOHN: We often find reactions in transfusion. Lindeman has reported a sharp rise in temperature in twenty-two out of sixty-two cases, and chills in about twelve cases. I have personally used the citrate method in about fifty cases and in about ten cases a very sharp rise in temperature followed the transfusion, which lasted for a few hours and then went down to normal. It seems that we cannot avoid that and I tell the patients beforehand they should not be alarmed if the temperature rises. I have never seen any harm arising from these temperatures, even when accompanied by a chill, and there has been no injury to the patient. Why that happens we really do not know. Possibly tests finer than the ones at our disposal will teach us how to avoid it. I have never seen profound shock in any of my cases and I suppose that Dr. Im-

peratori really meant a very high rise in temperature. This danger, inherent in any transfusion method, does not interfere with the good result of the transfusion.

DR. C. J. IMPERATORI: In the cases that Doctor Lewisohn has had of bacteremia or septicemia, were they followed by any sharp rise in temperature after transfusion?

DR. R. LEWISOHN: We know that in septicemia cases there is a much more marked rise in temperature than in others, but I have seen it in other cases too. Some of my colleagues having used the citrate have come to the conclusion that there is less reaction with this citrate method than with other methods.

DR. JAMES S. WATERMAN: In a large number of pneumonia treated by venesection, and intravenous injections of a normal saline solution, I found the injections were immediately followed by a chill and rise of temperature, just before a marked recession of the temperature. This reaction was similar to that seen after transfusion of blood—what the physiological significance of the reaction is I do not know.

Syphilis of the Lung. DR. HAROLD HAYS, New York City.

To be published in a subsequent issue of THE LARYNGOSCOPE.

DISCUSSION.

DR. M. TASCHMAN: I had the good fortune to examine Dr. Hays' case and I think it is equally rare and interesting. Personally, I have never seen its equal nor have I ever seen anything exactly like it in the literature. This patient was a very well nourished man. He had lost neither strength nor weight and had no fever. Physical examination was absolutely negative, sputum negative. There was no change in pulse rate, (very scanty expectoration.) By the older methods of diagnosis ten or fifteen years ago, the finding in this case would have escaped detection. I can truly say that in this particular instance the diagnosis was made absolutely by the Wasserman test and the X-ray examination. The fluoroscopic picture showed the condition even better than the plate or the photograph which is now being passed about. It showed a dark area on the right side about on a level with the fourth rib, at the fissure between the upper and middle lobes. At this level is seen a triangular mass rather dense with the base at the mediastinum and the apex in the axilla. The mass appeared superficial as though it were in the pleura.

I regret that we failed to make a stereoscopic roentgenographic examination in this case as this would have shown more clearly the accurate position of the mass. Syphilis of the lung is a rare disease and is seldom diagnosed *in vita*. Osler states in his article on syphilis of the lung in the System of Syphilis edited by Power and Murphy that of 2500 autopsies at Johns Hopkins Hospital, lesions which were believed to be syphilitic were present in twelve cases. In 6000 cases of syphilis taken from the records from the hospital of Copenhagen (reference, Browning and Mackenzie, recent methods in the diagnosis in the treatment of Syphilis, 1911, page 31), pulmonary syphilis was noted only in two. Syphilis of the lung frequently escapes detection, is frequently confounded with tuber-

culosis and the proper diagnosis not made until autopsy. The diagnosis of syphilis in this case is only presumptive and could have been proved absolutely by its complete disappearance under the use of the proper anti-syphilitic therapeutic measures. The Wasserman in this case was four plus. In a case published in 1906, the entire upper lobe was involved as shown by plate. Another plate taken some time later, after appropriate anti-syphilitic therapeutic measures had been applied, showed complete absorption of the syphilitic mass, thereby proving the true syphilitic character of the lesion. Given a case of a mass in the lung as this man showed together with a four plus Wasserman, it still remains to be proved beyond per-adventure that the two phenomena are due to the same cause. The plate in this particular case would tend to show that we are dealing with a syphilitic pleura rather than with a syphilitic lung. As far as I know syphilis of the pleura usually accompanies that of the lung, but in the case reported by Buchanan, before any symptoms pointing to lung disease appeared, the patient suffered from pleurisy on two occasions. In these cases of syphilis of the pleura there is always a sticking together of the tissues. Unfortunately, our patient has disappeared from observation. If we can induce him to submit to the proper treatment it would be of great interest to note the change produced thereby as seen by roentgenographic examination.

The American Laryngological Association announces that the de Roaldes Prize, a gold medal, representing \$100, the object of which is to encourage the advancement of the sciences of laryngology and rhinology, is now open for competition to practitioners in regular standing in the United States and Canada, not members of the American Laryngological Association. Essays must be typewritten, the customary means being taken to prevent disclosure of the author's name. They must be placed in the hands of the Secretary of the Association, Dr. Harmon Smith, 44 West Forty-ninth Street, New York, prior to April 20, 1916.

The illustration in Figure 3 of Dr. Freer's article on the intra-nasal opening of the frontal sinus in the December issue of THE LARYNGOSCOPE is rather too small for clear definition. A full page illustration appears in the reprints which may be had by writing to Dr. Freer, 25 East Washington Street, Chicago, Ill.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY,

Chicago, Ill., June 15 and 16, 1915.

Technique of Suspension Laryngoscopy, with Lantern Slides and New Instruments. DR. ROBERT CLYDE LYNCH, New Orleans, La.

(Published in the December, 1915, issue of THE LARYNGOSCOPE.)

DISCUSSION.

DR. ROBERT LEVY, Denver, Colo., complimented Dr. Lynch upon his work. Few laryngologists had the ability to apply suspension laryngoscopy as Dr. Lynch had done, or the skill to devise methods for the improvement of the original technic, which was very unsatisfactory. He had been particularly interested in the tongue depressor, because at first this had been one of the difficulties, and to keep the tongue out of the way was one of the problems. The object of the original tongue spatula was to keep the tongue in the median line, to press it out of place, and at the same time to prevent the overlapping of the margins of the tongue. Dr. Lynch's instruments had entirely met these requirements.

DR. WOLFF FREUDENTHAL, New York City, mentioned two cases which had come under his observation during the last two weeks and which demonstrated the necessity for some form of suspension apparatus. The first patient had been sent to him from out of town. The man was suffering from tuberculosis of the right lung, was very much run down, and could not swallow at all. His physician wrote that unless the epiglottis, which was very much inflamed, could be removed, the end was near. The man's pulse was so weak that when he was carried to the operating room it was necessary to stimulate him for half an hour. Local anesthesia was employed, he was put under suspension, and the operation performed in the shortest time possible. The whole process healed within two weeks, the patient returned to the mountains, and was able to swallow food. His ultimate recovery, of course, was uncertain. The second case was that of a woman who had swallowed a fish bone. She went to a clinic near by and the young interne sent her to the operating room, but failed to locate the foreign body, thought it was out, and dismissed the patient. Ten days later she consulted the speaker, at which time the entire left side was swollen, especially in the region of the arytenoid. Thinking she had an abscess, he made an incision, but got no pus. He put her under suspension, under general anesthesia, and removed the entire mass. The foreign body was not found, but the infiltration was extensive. When she recovered from the narcosis she became cyanotic from the blood running down, but this was removed, with some clots, and she recovered quickly.

DR. WILLIAM B. CHAMBERLAIN, Cleveland, Ohio, mentioned a case operated upon by him last winter, shortly after his return from a visit to Dr. Lynch in New Orleans. The case was reported in the January number of THE LARYNGOSCOPE. The patient was a child eight months old, and

had swallowed an open safety pin, which was removed without difficulty by the suspension method. He had had a second case in a child eleven months old, in which he had operated successfully by the same method. A third case was a baby two weeks old. The infant had just been removed from the maternity hospital, when the father came in and found the child choking. On looking into its mouth a large safety pin could be seen in the hypopharynx. When the speaker was called in he thought he was going to see a child two months old, and was discouraged when he learned it was only two weeks old. However, the pin, which was a very large one, was easily removed by turning under suspension. By any other method its removal would have been exceedingly difficult.

DR. ARTHUR I. WEIL, New Orleans, La., had seen a good deal of Dr. Lynch's work, and had done a good deal of suspension work independently. He could personally testify to the value of the innovations Dr. Lynch had introduced. He called especially attention to the value of this table top with suspension. He had formerly employed suspension with the crane attached to the head of the table, but the work was not nearly so satisfactory as with this extension table top devised by Dr. Lynch. The examination was rendered very much more reliable by this means than where one had to rely upon the screw of the suspension apparatus itself.

DR. JOHN W. MURPHY, Cincinnati, Ohio, mentioned a case which he had expected Dr. Lynch to operate upon on a proposed visit to Cincinnati. The patient's condition, however, became so bad before Dr. Lynch arrived that it was necessary to give him relief. He was a boy of twelve years of age, with a papillomatous growth which almost occluded the larynx. It was necessary to resort to tracheotomy and the removal of a sufficiently large portion of the papilloma to enable the boy to breathe. Several weeks later Dr. Lynch succeeded, by this method, in cleaning out the rest of the papilloma. It was interesting to note the number of onlookers who could see almost every manipulation which the operator made in this larynx. In a week's time this boy was up and able to return to his occupation as a jockey.

DR. LYNCH, in closing the discussion, referring to the question of anesthesia, said he preferred general anesthesia, with ether. Warmed ether vapor, as delivered by one of the new methods, had proved very satisfactory. On a recent visit to New York City he had had the pleasure of operating upon a patient under rectal anesthesia, administered by Dr. Gwathmey. He had had no other experience, but in this case the method worked admirably. There was complete muscular relaxation, the amount of mucus was less than usual, and the exhalation of ether from the lungs was hardly perceptible. He liked to work under cocaine analgesia in patients who were not afraid. Morphine and scopolamine were given first, then a solution of twenty-five per cent. cocaine in fifty per cent. alcohol was employed. One or two drops of this solution in the hypopharynx and on the laryngeal face of the tongue, then one or two drops of an aqueous solution of cocaine into the larynx, had given good results in his experience, enabling him to work for an hour or an hour and a half without difficulty. The suction apparatus which he used was a dental vacuum apparatus on an ordinary turbine pump, with a long tube which could be run down into the larynx and trachea for the pur-

pose of removing clots of blood or anything else. After the patient had been under suspension for twenty minutes or half an hour thick,ropy mucus accumulated in the pharynx, and this should be removed before the patient was taken from the suspension apparatus; otherwise this mucus would drop down into the larynx and choke the patient. He had never had vomiting under suspension.

The Tonsil Operation—An Inquiry Into the Actual Results Observed in a Series of Cases. DR. D. J. GIBB WISHART, Toronto, Can.

Not feeling comfortable in permitting the enucleation of the tonsil in every child where operation appears to be called for, and yet not having been able to glean anything from the abundant literature provided upon the question, which would show him the proper course to pursue, the author set out upon the examination of cases which had been operated upon since he adopted the enucleation method, ten years ago. He hoped thus to arrive at some data which would enable him to act with greater confidence, both with regard to his private clientele, and in the instruction of students. Letters were sent to each patient on the history cards, just as they came, and with no omissions, or selections. All cases which presented themselves were tabulated. The results were noted under the following heads: (1) Occupation; (2) Sex; (3) Age at time of operation; (4) Years since operation; (5) Previous operations, if any; (6) Symptoms complained of; (7) Effect of operation upon these; (8) Anatomical conditions resulting from operation; (9) Effect of operation upon voice; (10) Effect of operation on general well being; (11) Symptoms unrelieved; (12) Remarks.

The records compiled were from: private patients, twenty-eight cases in all, of which five were obtained by correspondence, and twenty-three examined personally in his office; those obtained from the Hospital Clinic, by Dr. McKelvey, seventeen in number. Because of faulty histories or the stupidity of parents, the records in the latter division were incomplete.

Sex and Age: Three to fifty-two years, the cases being about equally divided between the sexes up to fifteen; after puberty, in the proportion of two males to eleven females.

Time since operation: Average five to seven years; no instance less than two years; in seventeen cases eight years and over.

Effect of Operation upon Symptoms Complained of: Not only were the symptoms (Tonsillitis, ten cases; frequent colds, fourteen cases; enlarged glands, three cases; voice defects, eleven cases; swelling and aching throat, twelve cases; ear affections, ten cases; rheumatic symptoms, four cases; and headache, cough, enuresis, neuralgia, iritis, debility, restlessness, chorea, endocarditis, quinsy, dullness, etc., in one or more instances) complained of relieved, but it was notable that in nineteen cases the health was decidedly improved, and in no case was it deteriorated. The results of operation upon the symptoms actually present at the time when consultation took place, were so uniformly good that the operation itself was justified. It was to be noted that, in hospital cases, where portions of the tonsil remained in situ, the effect upon symptoms was no better, if as good, as in private patients where enucleation was complete. It was not apparent that leaving a portion of

the tonsils resulted in any benefit whatever to the patient, nor did the complete removal exert any deleterious effect.

Anatomical Results: In patients from three to eleven years of age the results were apparently perfect in seven cases, the position of the palate normal in eleven cases, and in three cases there were minor variations which might or might not be considered as defects. In one private case a small patch of tonsil in the lower left sinus gave rise, seven years after operation, to swollen glands. In six clinical cases there were defects, chiefly the presence of small tags. In cases from twelve to fifteen years of age, results were apparently perfect in two cases; in one there was a marked variation in the curve of the palate arch; in one there was obliteration of the pillars, and in three there were scars.

In cases from twenty-one to fifty-seven years of age the results were apparently perfect in five cases. In three there were minor variations, not necessarily to be considered as defects. In four cases there were real defects. In the most seriously deformed of these last four, the voice was definitely improved, and in one a good singing voice had been developed. In the cases in which the tonsil was extirpated in its entirety the anatomical results were undoubtedly best. In ten cases the notes failed to show whether there were adventitious bands of adhesion due to repeated attacks of inflammation in the tonsils, but the lesions of the pillars found present after operation could undoubtedly be ascribed to such a condition. The patients who had suffered from repeated attacks of tonsillitis were those in whom scars and malpositions were most numerous.

The effect upon the voice was carefully inquired into in all cases. Careful analysis of the results led to the deduction that the effect of extracapsular enucleation upon the singing voice or fatigued voice was not prejudicial, but might be considered beneficial.

General Well-being: Practically every case was singularly corroborative of the view, long held, that the removal of diseased tonsils is attended by marked improvement in the general health of the patient.

Symptoms Unrelieved: In fifteen cases these were mentioned. In three the nose was the seat of the trouble; in five the symptom complained of was aside from the question. In two endocarditis was noted, once as a new symptom, once as recurring in a post-operative attack. In one case nervousness and choreic tendency were thought to be independent of the original throat condition.

Remarks: Under this head the author directed special attention to certain features of individual cases. The results of his investigation are presented in tabular form.

Partial Paralysis of the Soft Palate Following Removal of Tonsils and Adenoids. Observations on the Tonsil and Adenoid Operation.

DR. DUNBAR A. ROY, Atlanta, Ga.

(Published in the June, 1915, issue of THE LARYNGOSCOPE.)

DISCUSSION.

DR. GEORGE L. RICHARDS, Fall River, Mass., gave briefly a review of 188 cases in children operated upon by himself and his assistants during the last two years. It was found that the result was good in 144 cases,

or 77 per cent. By *good* he meant that the anterior pillar was there as a folded-over pillar, and not as a narrow line. The result was fair in 38 cases, or 20 per cent. By *fair* he meant that there remained some scars. There were six cases, or three per cent., in which the results were poor. The voice was very bad in two cases, in which the uvula was caught and in which there was a distinct scar. He thought these would have a nasal tone, but they sang the scale perfectly well. He had reports of some of the children covering two years. It was a curious fact that if the anterior pillar alone was injured and the posterior pillar was not, the child had a good voice. Of the 188 cases, 20, or 9 per cent., had scars. By *scars* he meant contractions in which a little line could be seen. There was a tendency on the part of nature to replace more or less lymphoid tissue, and this manifested itself in granulations in the pharynx. Many patients complained of this, which gave a "scrappy" sensation, especially in winter. There were 45 cases, or 25 per cent., in which these granulations could be seen. The pillars were injured in 23 cases, or 12 per cent., some sort of a little nick or injury having been inflicted. It was very easy to leave some remnant of the tonsil; this had been done in 16 cases, or 8 per cent. There was no hemorrhage. The patients, operated upon in the morning, were kept in the hospital until afternoon and then allowed to go home. Whether complete mouth-breathers or not, 16, or 8 per cent., breathed through the mouth where a part of the adenoids had been left. In order to be absolutely accurate as to results with reference to the voice, one must make records of this before the operation. Five, or two per cent., of his cases already lisped.

Dr. Richards presented a plaster model of the pharynx, upon which he demonstrated the relationship of the tonsils and the pillars. After a perfectly satisfactory operation the anterior and posterior pillars should be distinct, and not fused together.

DR. WILLIAM B. CHAMBERLIN, Cleveland, Ohio, considered any method of tonsillectomy good which removed the tonsil and nothing else. The structure most easily injured was the posterior pillar at the junction with the uvula. The posterior pillar, which was extremely delicate, could be torn, just as could a piece of cloth. A quadrilateral palate might result. In his experience, as doubtless in that of others, disappointing results had been obtained in cases in which he thought the operative procedure absolutely perfect. This was due to the contraction of the scar tissue. He had never had an unsatisfactory result so far as the voice was concerned, not even for its finer uses, as by singers and public speakers.

Sometimes, in the removal of the adenoids after the tonsil operation, laceration of the posterior pillar was noted. This was the result of the gagging of the patient, plus the traction of the curet, thus causing injury to the pillar. It was important, after the adenoid operation, to palpate the nasopharynx to see that every portion of adenoid tissue had been removed. Injury to the posterior pillar might result from rough handling in the examination by the finger. If, with the adenoid curet, one continued the sweep too far downward, it was easily possible to strip off the entire mucosa of the posterior pharyngeal wall, leaving cicatricial tissue instead of healthy mucosa.

DR. J. A. STUCKY, Lexington, Ky., considered this study of the results of the tonsil operation very important. In his section of the country

tonsillectomy was being performed not only by general practitioners but by general surgeons. In his college town there were several thousand students, and many teachers were constantly referring pupils to him for some defect in speech and vocalization. The Society should go on record as advocating that the tonsil operation is not a minor operation, and that it is under-estimated and under-paid. It should be considered as a hospital operation. Those who teach students should see that every step of the operation is seen by them. The point made by Dr. Chamberlin was a very important one. It should be done gently, however. The fingers of many operators were too large for this, and for that reason he advocated the use of a postnasal sponge holder, with which one could go in and swab out the pharyngeal vault as carefully as the gynecologist would swab the fundus of the uterus.

DR. WENDELL C. PHILLIPS, New York City, referring to Dr. Wishart's statement concerning Case 12 of the series, that operation was probably done too late in life to be useful so far as hearing was concerned, said if seven years were added to the patient's age it would then be time for otosclerosis to appear, besides, the mother had deafness. Earlier operation would have had the same result. So much had been said from time to time about the danger of removing the tonsils from singers that he had become very careful in this regard. He had not had an extensive experience in operating on singers, but in every case in which he had removed the tonsils not only had the voice not been injured, but it had been improved by the procedure. Within the last few months he had After being told that if he were to read the literature of the subject he advised the removal of the tonsils from a man, a singer, a patient of Dr. Babbitt's who had typical cheesy masses in the crypts of the tonsils. his voice, the patient said that he might as well have the operation, as he would not sing much otherwise. Dr. Babbitt removed the tonsils and the man's voice was very much improved.

DR. JOHN F. BARNHILL, Indianapolis, Ind., said it should be regarded as a settled fact that tonsils should be removed completely. He had been particularly impressed by Dr. Wishart's statement to the effect that imperfect operations were done abroad; that he had seen many of these cases, done in America, and had had to do the work over. The speaker had never regretted taking out tonsils completely whenever it was necessary to take them out at all, and he had always regretted imperfect work. He thought some of the symptoms mentioned following tonsillectomy were not due to the tonsils at all but to some of the structures not removed. For instance, if any diseased portion of Waldeyer's ring were not removed it would continue to become inflamed. The adenoid ring in its effects might be confused with the old trouble. The lingual tonsil became inflamed over and over again. There was an attempt on the part of nature to restore some of the tissue which had been removed, and there might be soreness of the lingual tonsil which did not exist or was not noticed before. He had seen paralysis of the soft palate following these operations, as suggested by Dr. Roy, and had considered it due, in some cases, to infiltration, and in some to traumatism caused by the finger in the vault of the pharynx, together with marked contraction of the soft palate. He had seen sloughing of the uvula in some of these cases. He cited one case in which the uvula, which

had apparently not been injured, sloughed away ten days later. No harm resulted from it.

DR. SIDNEY YANKAUER, New York City, agreed with the other speakers with reference to the importance of avoiding roughness in handling the tissues in tonsil and adenoid operations. Undoubtedly many of the bad results reported from time to time were due to this error of technic. It was not difficult to imagine the amount of injury that might be done by an inexperienced operator with a rough gauze sponge rubbed about in the pharynx. For a number of years he had used a suction apparatus for the removal of blood and mucus from the throat, thus eliminating all traumatism. He had discarded gauze sponges entirely; whenever it was necessary to use any sponges, he employed soft sea sponges. In this way he had been able to avoid all traumatism, and the patient could take a full meal in from twenty-four to forty-eight hours.

DR. JAMES F. McCAW, Watertown, N. Y., cited a case called to mind by Dr. Roy's paper. The patient, a little girl five years of age, had paralysis of the soft palate immediately following the adenoid and tonsil operation. He had attributed it to his over-zealousness in attempting to rid the child of every vestige of adenoid tissue, by using an over-large adenotome. The paralysis lasted seven or eight months.

DR. G. HUDSON MAKUEN, Philadelphia, wished to say a word in his own defense, inasmuch as reference had been made to something he had written bearing on this subject. One thing upon which he had ceased to speculate concerning the tonsil operation was the idea that the mere removal of the faucial tonsil injures the voice. When the removal of the faucial tonsil was absolutely indicated, and when it was properly removed, no injury could result. When its removal was indicated, the tonsil itself was a menace to the voice. The thing that injured the voice was the faulty removal of the faucial tonsil or the adenoids. An operation which tended to paralyze or to mutilate the soft palate must of necessity injure the voice. An important thing in this connection was what might be called the musical instinct. If a singer had a musical ear and a musical brain he would sing fairly well even with a damaged pharynx. Just as a good violinist could make good music on a poor instrument, so a good singer could have a good voice with an indifferent vocal instrument.

DR. GEORGE F. KEIFER, Lafayette, Ind., had had two cases of paralysis of the soft palate following the tonsil and adenoid operation, due, he thought, to the use of the palate retractor—or *protractor*, as this instrument should be called. If, in inserting the finger, one would hug the posterior pharyngeal wall one would not be apt to injure the soft palate, even if the patient gagged. He had abandoned the use of the retractor.

DR. CLIFTON M. MILLER, Richmond, Va., emphasized the importance of warning patients who sing not to begin to use the voice in the higher registers too soon after the tonsil and adenoid operation. He cited the case of a young lady whose tonsils he removed, warning her not to use the voice in the higher registers for six weeks, but to confine her use to the middle or normal registers. At the end of three weeks she felt so well that she began to sing in the high registers, and her voice broke. The mental effect was so profound that instead of being able to use the upper registers in six weeks it was six months before she could do so. The psychic effect on these patients, with their highly organized

nervous systems, was apt to be very profound, and for this reason they should be emphatically warned.

DR. GREENFIELD SLUDER, St. Louis, Mo., emphasized the point made by Dr. Richards in reference to nature's attempts to reproduce lymphoid tissue after tonsillectomy. He called attention to the fact that the lingual tonsil gives rise to a lymphoid growth which extends into the tonsillar fossa and at times reproduces what is anatomically perfectly corresponding to the original tonsil and clinically takes on all of its pernicious activities. He mentioned also that in many cases pharyngitis lateralis was developed, also being at times clinically pernicious. Whether these reproductions of lymphoid masses be a part of nature's effort in healing or whether they be a manifestation of continued diseased activities is a question that he has not been able to solve. In the Archiv. fur Laryngologie, for 1912, Dr. Oswald Levinstein described what he termed a new pathological tonsil which developed in the lateral aspect of the tongue just anterior to the palatoglossus fold. I have confirmed Dr. Levinstein's observations, finding this hypertrophy of lymphoid follicles massed together in such a way as to resemble a tonsil in cases of "painful tongue," the condition described by Sir Henry Butlin in his monograph "Diseases of the Tongue," in which the lymphoid follicles at the junction of the palatoglossal fold with the tongue proper were the only demonstrative lesions. Levinstein attributes this tonsillar development to irritation in the lymphoid tissue. This surely seems to be a development in a pathological line.

He had also been interested in the question of the production of scars in the throat and had frequently noted the quadrilateral palate mentioned by Dr. Chamberlin. This might occur regardless of the method employed for the tonsillectomy, and comes to pass because of the fact that the operator cannot control the fixing or focussing of the scar which must needs develop. He thought it advantageous to focus the scar anterior and below to draw the palate downward and forward which pulls its way from the Eustachian tube above. He thought this to be a definite help in cases where the tonsil is removed because of the Eustachian tube irritation. He did not believe, from an extensive observation, that this interfered in any way, shape or form with speech or the artistic use of the voice. He mentioned that he had dwelt upon this point (drawing the palate downward and forward) in his paper to the American Medical Association, in 1910, in which he described a "Method of Tonsillectomy by means of the Alveolar Eminence of the Mandible and the Guillotine."

Answering a question by Dr. Richards regarding his earlier cases, Dr. Sluder explained that he had formerly considered the plica tonsillaris as a part of the pillar. It was with this idea in mind that he made the statement that he always removed a portion of the anterior pillar which tended to fix or focus the scar downward and forward and that usually a few muscle fibres were attached to it. The careful examination of hundreds of tonsils reveals that very seldom is much muscle fibre attached, and that with a little attention to this point the entire palatoglossus may be pushed aside and the plica, with the membrane covering it, removed, in no sense and in no degree injuring the pillar proper.

(To be continued).

